

CPVC PRO[®]

ADVANCED HOT AND COLD WATER PLUMBING SOLUTIONS

PRODUCT CATALOGUE



CONTENTS



03

ABOUT ASTRAL

04

INNOVATION &
RECOGNITIONS

05

MARKETING
NETWORK

06

ABOUT CPVC PRO

07

PIPE TEMPERATURE
PRESSURE RATING (°C)

08

STANDARDS &
SPECIFICATIONS

09

ABOUT NSF
APPROVAL

10

WHY ASTRAL
CPVC-PRO

12

KEY
PROPERTIES

13

FIELDS OF
APPLICATIONS

14

BASIC PHYSICAL
PROPERTIES

15

TECHNICAL
DETAILS

17

FLUID HANDLING
CHARACTERISTICS
OF ASTRAL CPVC
PRO PIPES

21

THERMAL
EXPANSION AND
CONTRACTION

23

HORIZONTAL &
VERTICAL SUPPORTS

24

UNDERGROUND
INSTALLATION

25

REQUIREMENT
OF THERMALLY
INSULATED
CPVC PIPE

26

PRODUCT
RANGE

50

INSTALLATION
PROCEDURE

52

HOW TO USE
SOLVENT CEMENT
PRIMER & CLEANER

53

PRESSURING
SOLVENT
ADHESIVE JOINTS

54

IMPORTANT
NOTES

55

GENERAL
GUIDELINE FOR
ALL INSTALLATIONS

**1st TO
INTRODUCE
CPVC
IN INDIA**

**1st TO
INTRODUCE
UPVC LEAD
FREE PIPES
IN INDIA**

**1st TO
INTRODUCE
LOW NOISE
PP DRAINAGE
PIPES IN INDIA**

**1st TO
INTRODUCE
FOAMED PVC
DRAINAGE
PIPES IN INDIA**



**1st TO
INTRODUCE
LEAD FREE
COLUMN PIPES
IN INDIA**

**1st TO
INTRODUCE
POLYMER BASED
INDUSTRIAL
PIPING SYSTEM
IN INDIA**

**1st TO
INTRODUCE
NSF APPROVED
SOLVENT
CEMENT
IN INDIA**

**1st TO
INTRODUCE
CPVC PIPING FOR
AUTOMATIC
FIRE SPRINKLER
SYSTEM IN INDIA**

ASTRAL, INDIA'S PROGRESSIVE BUILDING MATERIALS COMPANY

Established in 1996 with the aim to manufacture best-in-globe plastic piping systems, Astral Pipes fulfils emerging piping needs of millions of houses and adds extra mileage to India's developing real estate fraternity with the hallmark of unbeaten quality and innovative piping solutions. Keeping itself ahead of the technology curve, Astral has always been a front runner in the piping category by bringing innovation and getting rid of old, primitive and ineffective plumbing methods. Bringing CPVC in India, and pioneering in this technology, have set Astral apart and its highest quality enabled it to obtain NSF approval for its CPVC pipes and fittings. Astral went beyond the category codes by launching many industry firsts, like launching India's first lead-free uPVC pipes for plumbing as well as for stream water, just to name a few.

Astral Pipes offers the widest product range across this category when it comes to product applications. Astral Pipes is equipped with production facilities at Santej and Dholka in Gujarat, Hosur in Tamil Nadu, Ghiloth in Rajasthan, Sangli & Aurangabad in Maharashtra, Cuttack in Odisha and Sitarganj in Uttarakhand to manufacture plumbing systems, drainage systems, agriculture systems, fire sprinkler piping systems, industrial piping and electrical conduit pipes with all kinds of necessary fittings.

Astral Pipes' Infrastructure division offers a comprehensive product range including corrugated piping for drainage and cables, polyolefin cable channels, sewage treatment plants, plastic sheathing ducts, suction hoses, and sub-surface drainage systems. This range helps Astral to establish a strong foothold in infrastructure and agriculture sector in the constantly evolving business of piping.

In 2014, Astral forayed into the adhesives category by acquiring UK-based Seal It Services Ltd. and Kanpur based Resinova Chemie Ltd., which manufacture adhesives, sealants and construction chemicals. With five manufacturing facilities now in this business segment, Astral has strengthened its presence in the category and made rapid inroads.

In the year 2020, Astral has expanded its product portfolio and entered into the Water Tanks Segment. The water tank segment is an expanded domain of plumbing and water supply with a huge nationwide potential. Astral Pipes manufactures water tanks from its Santej, Aurangabad, Cuttack, Hosur & Ghiloth manufacturing facilities. A wide range of water storage tanks has helped Astral to become a versatile player in the industry.

Extending the product portfolio further, in the year 2022 Astral forayed into the categories of Faucets and Sanitaryware, followed by acquisition of Bangalore based Gem Paints to enter in the Paints category. This expansion will help Astral march firmly towards becoming a holistic building materials company.

ADHESIVES

EPOXY ADHESIVES & PUTTY
SILICONE SEALANTS
CONSTRUCTION CHEMICALS **PVA**
CYANOACRYLATE **SOLVENT CEMENTS**
TAPES **POLYMERIC FILLING COMPOUND**
ANAEROBIC ADHESIVES
INDUSTRIAL ADHESIVES
INSTANT HAND SANITIZER
SURFACE CLEANING PRODUCTS

PIPING

PLUMBING PIPES & FITTINGS
CPVC, PVC & PEX
SEWERAGE DRAINAGE PIPES & FITTINGS
AGRICULTURE PIPES & FITTINGS
INDUSTRIAL PIPES & FITTINGS
FIRE SPRINKLERS PIPES & FITTINGS
CONDUIT & CABLE PROTECTION
ANCILLARY PRODUCTS
URBAN INFRASTRUCTURE

WATER TANKS

PAINTS

DUCTING

FAUCETS

SANITARYWARE





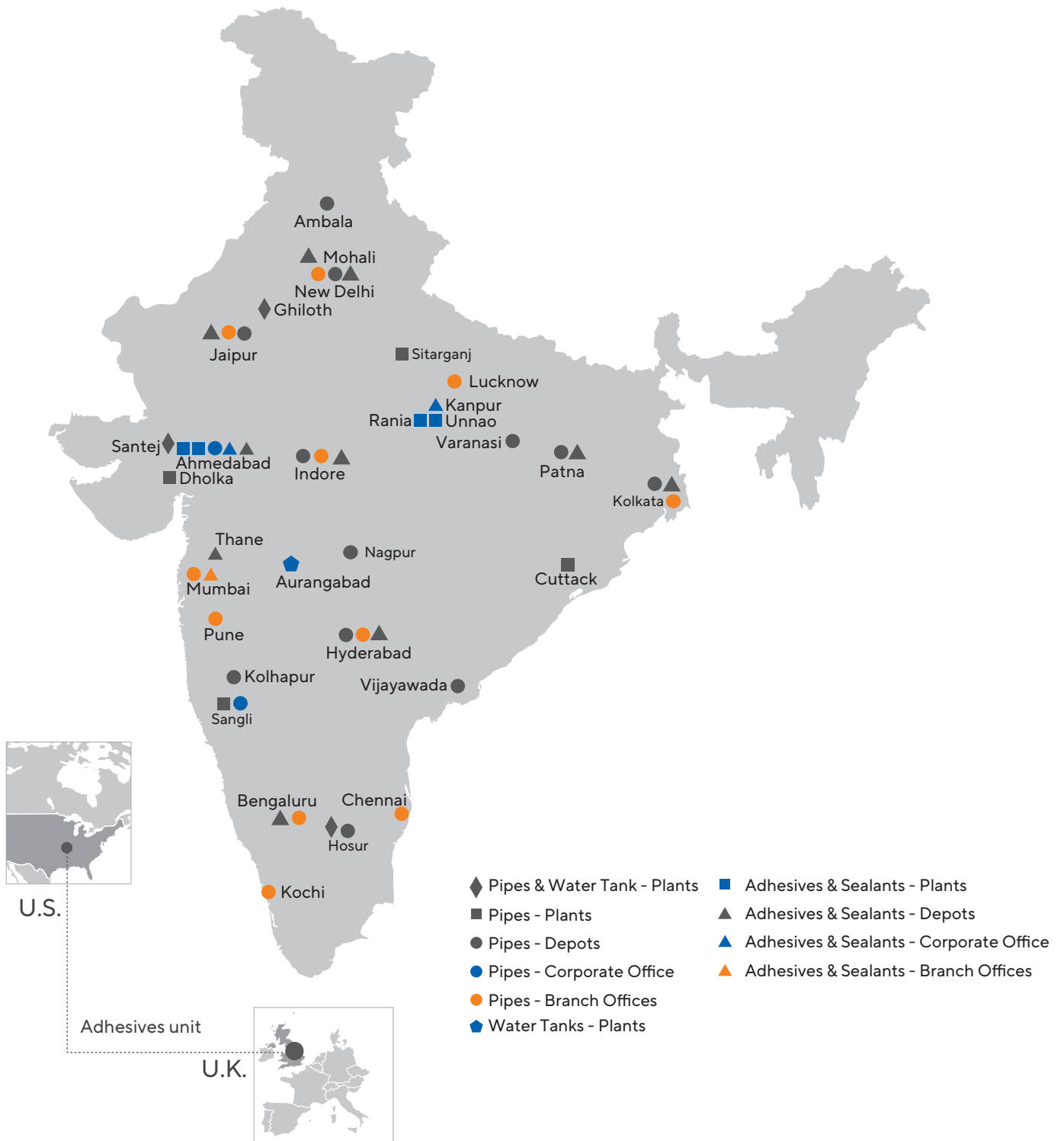
INNOVATION & RECOGNITIONS

- First to introduce CPVC piping system in India (1999)
- First to launch lead free uPVC piping system in India (2004)
- Corp Excel- National SME Excellence Award (2006)
- First to get NSF Certification for CPVC piping system in India (2007)
- First to launch lead-free uPVC column pipes in India (2012)
- Enterprising Entrepreneur of the year (2012-13)
- Business Standard Star SME of the year (2013)
- Inc. India Innovative 100 for Smart Innovation under category of 'Technology' (2013)
- India's Most Promising Brand Award (2014)
- Value Creator Award during the first ever Fortune India Next 500 (2015)
- India's Most Trusted Pipe Brand Award (2016, 2019, 2020 & 2022)
- ET Inspiring Business Leaders of India Award (2016)
- India's Most Attractive Pipe Brand Award (2016)
- Fortune India 500 Company (2016)
- Consumer Validated Superbrands India (2017, 2019, 2021 & 2022)



MARKETING NETWORK

Astral has a marketing network of more than 800 distributors and 30,000 dealers spread all over India with branch offices at Mumbai, Pune, Delhi, Bengaluru, Chennai, Hyderabad, Jaipur, Lucknow and Kochi. Apart from that Astral has its own warehouses at Vijaywada, Hyderabad, Delhi, Kolhapur, Kolkata, Nagpur, Indore, Patna, Varanasi, Jaipur & Hosur to deliver the material as quick as possible. More than 400 techno marketing professionals and administrative personnel are on the board to coordinate with architects, plumbing contractors and plumbers to utilize the best plumbing techniques and to get the best from the products.





ABOUT **ASTRAL** CPVC PRO®

Astral CPVC PRO is a class apart in the category, it is more than just a hot and cold plumbing system. To us it is an initiative, to deliver a world class plumbing solution.

Astral CPVC PRO pipe and fittings, manufactured by Astral Limited, are made from the specialty plastic, chemically known as Chlorinated Poly Vinyl Chloride [CPVC]. The CPVC compound shall meet cell class DP 110-2-3-2 as per IS:15778 and a maximum service temperature up to 93°C. The compound is carefully designed in our R & D and backed by our own expertise of manufacturing CPVC piping system from 19 years,

which will give excellent results in all applications for CPVC piping system. It is unique combination of highest Impact resistance without any loss in pressure bearing capacity / Tensile strength or Vicat softening temperature. This will ensure best trouble free service and also stood notch above the initial installation issues of cracking / damages due to handling, storage and installation.

The pipes are produced in copper tube size (CTS) from 15 mm (½”) to 50 mm (2”) with two different standard dimensional ratios - SDR 11 and SDR 13.5 (Class 1 & Class 2 respectively as per IS:15778) . The fittings are produced as per SDR 11. The pipes and fittings in SDR 11 class is also complies to ASTM standard. All Astral CPVC SDR 11 and SDR 13.5 pipes are made from identical CPVC compound material having same physical properties. The CPVC fittings are manufactured from compound material which meets all the requirement as per ASTM standard. Apart from having the same physical properties, SDR 11 and SDR 13.5 which are having different wall thickness and therefore, at any given temperature, they have different pressure ratings. For e.g.

PIPE TEMPERATURE PRESSURE RATING (°C)

GRADE	UNIT	23°C	82°C
SDR 11	psi	400	100
	kg/cm ²	28.1	7.0
SDR 13.5	psi	320	80
	kg/cm ²	22.5	5.6

Astral also produces CPVC PRO pipes in iron pipe size (IPS), available sizes are 65 mm (2½”) to 300 mm (12”) in SCH 40 and SCH 80 which meets the requirements of ASTM F 441. The pressure ratings varies with schedule pipe size and temperature. CPVC pipes of Copper Tube Size (CTS) dimensions can also be connected to CPVC (IPS) dimensions by using IPS x CTS fittings.



STANDARDS & SPECIFICATIONS

ASTM D1784 Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.

ASTM D2846 Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Hot & Cold water distribution systems.

ASTM F493 Standard Specification for Solvent Cements for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe & Fittings.

ASTM F441 Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe, SCH 40 & 80.

ASTM F438 Socket-Type Chlorinated Polyvinyl Chloride Plastic Pipe Fittings. SCH 40.

ASTM F439 Socket-Type Chlorinated Polyvinyl Chloride Plastic Pipe Fittings. SCH 80.

ASTM D2774 Underground installation of Thermoplastic pipes.

IS:15778 Chlorinated poly vinyl chloride (CPVC) pipe for potable hot & cold water distribution supplies.

IS:17546 Chlorinated Polyvinyl Chloride (CPVC) Fittings For Potable Hot And Cold Water Distribution Supplies.

PRODUCT RANGE

Class 1 (SDR 11) & Class 2 (SDR 13.5): 15 mm (½") to 50 mm (2") CTS -Confirming to IS:15778:2007 As per ASTM D2846

SCH 40: 65 mm (2½") to 150 mm (6") IPS As per ASTM F441 & ASTM F438

SCH 80: 65 mm (2½") to 300 mm (12") IPS As per ASTM F441 & ASTM F439

MARKING & UNIFORMITY

Pipes and fittings made from CPVC compound are clearly marked with the manufacturers trademark, material designation, applicable ASTM standard.

SDR 11 Pipe: Tan coloured with red stripe

SDR 13.5 Pipe: Tan coloured with brown stripe

SDR 11 fittings: Tan colour

SCH 40 Pipe: Tan colour with brown stripe

SCH 40 fittings: Tan colour

SCH 80 Pipe: Tan colour with red stripe

SCH 80 fittings: Tan colour / Grey colour



ASTRAL CPVC PRO PIPE AND FITTINGS ARE THE BEST CHOICE FOR HOT AND COLD POTABLE WATER DISTRIBUTION



THE RAW MATERIAL

Astral CPVC Pro pipes and fittings are manufactured with specially designed CPVC Compound formulated by Astral itself. The compound is mixture of imported CPVC Resin and other ingredients like Impact Modifiers, Lubricants, UV stabilizers etc.

The compound for pipes and fittings are carefully designed in our R&D facility and checked for different properties like Dynamic Thermal Stability, Fusion, Torque and all other rheological properties. Thus designed CPVC compound can give highest processibility as well as best Physical and Mechanical properties.

The compound meets or exceed all requirements for cell classification for IS:15778 and ASTM D2846.

The material is also approved by NSF for its safe use with potable water and thus completely safe for drinking water.

ABOUT NSF APPROVAL

Astral Limited is proud to announce that Astral CPVC PRO is approved by NSF International, a leading global independent public health and safety organization. To receive certification, Astral Limited submitted product samples to NSF that underwent rigorous testing to recognized standards and agreed to unannounced manufacturing facility audits and periodic retesting to verify continued conformance to the standards. Find us in the NSF water listings by visiting <http://www.nsf.org/certified-products-systems>.

ABOUT NSF INTERNATIONAL

NSF International is a global independent organization that writes standards and protocols and tests and certifies products for the food, water and consumer goods industries to minimize adverse health effects and protect the environment. NSF operates in over 165 countries. Founded in 1944, NSF is a Pan American Health Organization/World Health Organization Collaborating Center on Food Safety, Water Quality and Indoor Environment.

WHY ASTRAL CPVC PRO

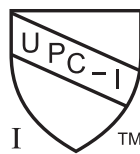
INTRODUCED CPVC FOR THE FIRST TIME IN INDIA

There was a time when CPVC pipes were not accepted by the industry. This was mainly because GI pipes were 30% cheaper than CPVC pipes. So strength of steel and cost were major factors why GI pipes were norms. But Astral introduced CPVC pipes in India for the first time embarking upon anti-corrosion and hot water compatibility. Since then, Astral CPVC has been a flagship CPVC product leading the way in the market.



HIGHEST NUMBER OF CERTIFICATIONS

NSF, BIS and IAPMO Certifications : Astral the only pipe manufacturing company in India having most prestigious quality approval from National Sanitation Foundation (NSF), Bureau of Indian Standards (BIS) and certifications from IAPMO.



*ONLY THOSE PRODUCTS BEARING THE ABOVE MARKS ARE CERTIFIED.

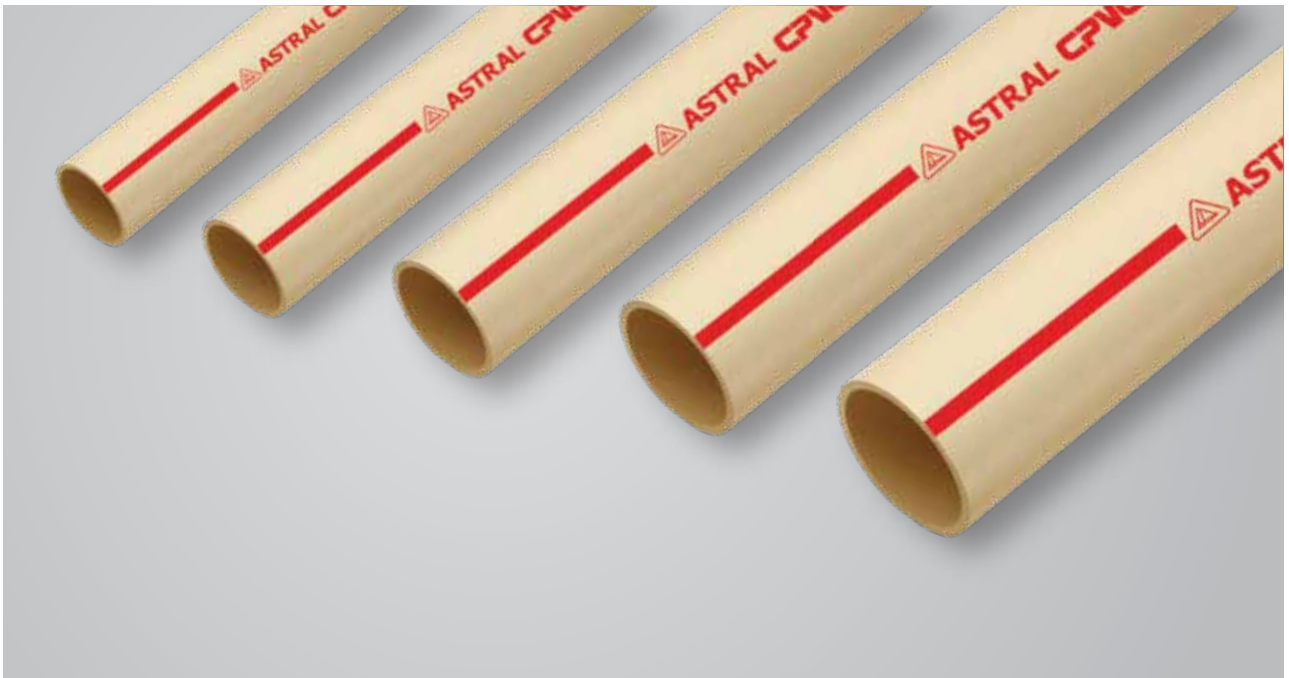
STATE OF THE ART MANUFACTURING

Astral is equipped with state of art manufacturing facilities at Santej, Hosur and Ghiloth plants. High speed and accurate extruders and injection molding machines including innovative manufacturing techniques being used to manufacture the ultra modern, errorless Astral CPVC PRO pipes and fittings.



WIDEST PRODUCT RANGE

Astral is the only company that provides the pipes with sizes ranging from 1/2" to 12" diameter. Hence you can meet any requirement with this widest range of CPVC pipes.



TOTAL BACKWARD INTEGRATION

All of Astral's CPVC Pipes and Fittings are made from CPVC Compound which is manufactured and controlled by Astral at every stage of the process. This backward integration helps us consistently maintain the highest quality for all pipes and fittings.

SKILL DEVELOPMENT INITIATIVES FOR PLUMBERS

Astral provides training to plumbers and plumbing contractors throughout the year by updating them about modern plumbing techniques and to do plumbing work more effectively and professionally.

KEY PROPERTIES



CORROSION RESISTANCE

Astral CPVC PRO pipe gives excellent resistance even under the harshest of water conditions so there are none of the purity worries from corrosion of metal pipe or soldered joints. Astral CPVC PRO pipe keeps pure water pure.



EASY PLUMBING PROCESS

CPVC uses a simple, solvent cement jointing method. Tools required are very simple and inexpensive (chamfering tool and pipe cutter only) and avoid the need for an electrical source. Also due to superior insulation properties compare to copper and GI, this system saves installation cost.



LOWER BACTERIAL GROWTH

Bacteria build up with CPVC is far lower than with alternative piping materials due to very smooth internal surface. It does not deteriorate quality of water and prevents contamination, unpleasant odour, bad taste and discolouration of water.



UNAFFECTED BY CHLORINE IN WATER

Some materials may be adversely affected by chlorine contained in the water supply, which can cause breakdown of the polymer chains and potential leaks. In this respect, Astral CPVC PRO pipe is unaffected by the chlorine present in potable water supply.



NO SCALE, PIT OR LEACH FORMATION

Even after years of use in the most aggressive conditions, this pipe won't corrode, standing against low pH water, coastal salt, air exposures and corrosive soils. It stays as solid and reliable as the day it was installed, maintaining full water carrying capacity.



HOT WATER COMPATIBLE

Astral CPVC PRO pipe is compatible with both hot and cold water. It withstand very high temperature upto 93°C. Many solar, electric and gas water heaters have CPVC piping system for heat efficiency and lower installation cost.



LOW THERMAL EXPANSION

Astral CPVC PRO pipe has a lower coefficient of thermal expansion, reducing the amount that the pipe expands when hot water is running, again reducing unsightly 'looping' of the pipe.



FIRE SAFETY

CPVC has a Limiting Oxygen Index (LOI) of 60. Thus in air, Astral CPVC PRO pipe does not support combustion. No flaming drips, does not increase the fire load, low flame spread, low smoke generation.



TOUGH, RIGID MATERIAL

Astral CPVC PRO pipe has a much higher strength than other thermoplastics used in plumbing. Hence, it needs less hangers and supports and there is no unsightly looping of the pipe. It has a higher pressure bearing capability, leading to the same flow rate with a smaller size. Also having high UV resistance, life span is more than 50 years.



APPROVED WORLDWIDE

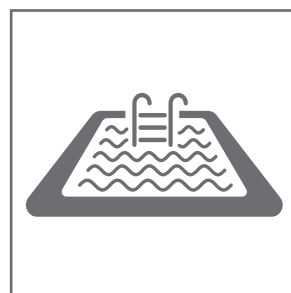
CPVC plumbing system is approved for contact with potable water in wide range of countries including USA, UK, Canada, Germany, France, The Netherlands, Middle East, Africa etc.

FIELDS OF APPLICATIONS

Astral CPVC PRO Pipes are ideal for Hot and Cold water applications in

- Homes, apartments
- Hotels, resort
- Hospitals
- High and low rise buildings
- Corporate and commercial houses
- Academic institutes

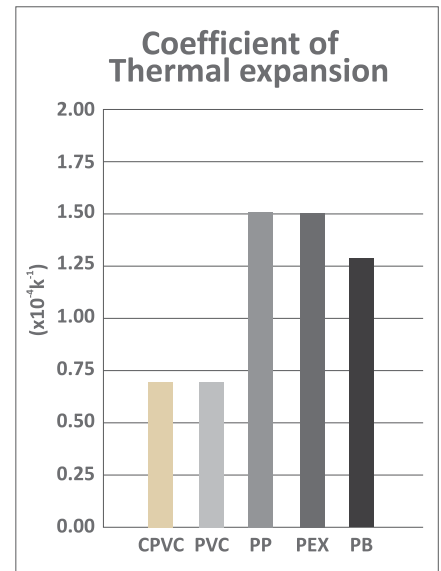
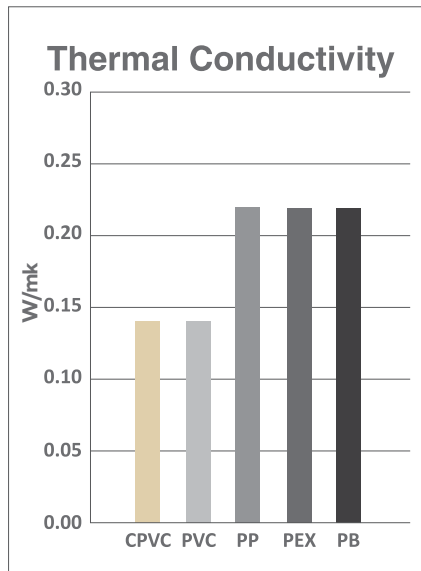
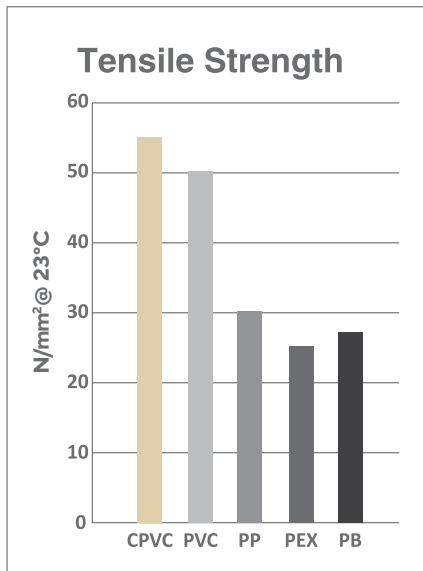
etc. for pure and hygienic water supply.



BASIC PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	ENGLISH UNIT	SI UNIT
GENERAL PROPERTIES			
Specific Gravity @ 23°C	ASTM D792	1.50 g/cm ³	1.50 g/cm ³
Specific volume @ 23°C	-	0.666 cm ³ /g	0.666 cm ³ /g
Water Absorption @ 23°C	ASTM D570	0.02%	0.02%
Water Absorption @ 100°C	ASTM D570	0.50%	0.50%
Cell Class	ASTM D1784	23447-B	D.P.110-2-3-2
Rockwell Hardness @ 23°C	ASTM D785	119	-
MECHANICAL PROPERTIES			
Izod Impact (Notched) @ 23°C	ASTM D256	4.5ft.lbs/in	267 J/m
Tensile Strength @ 23°C	ASTM D638	8000 psi	55 N/mm ²
Tensile Modulus @ 23°C	ASTM D638	3,94,000 psi	2710 N/mm ²
Flexural Strength @ 23°C	ASTM D790	15,100 psi	104N/mm ²
Flexural Modulus @ 23°C	ASTM D790	4,15,100 psi	2860N/mm ²
Compressive Strength @ 23°C	ASTM D695	10,200 psi	71 N/mm ²
Compressive Modulus @ 23°C	ASTM D695	1,97,500 psi	1360 N/mm ²
THERMAL PROPERTIES			
Coefficient of Thermal Expansion	ASTM D696	3.4X10 ⁻⁵ in/in/°f	6.3 X10 ⁻⁵ m/m/°K
Thermal Conductivity	ASTM C177	0.95 BTU/(hr.ft ² .°F)	0.14 W/mk
Heat Distortion Temperature	ASTM D648	221°F	105°C
Heat Capacity@23°C	DSC	0.21BTU/lb°F	0.90J/gK
Heat Capacity@100°C		0.26BTU/lb°F	1.10J/gK
FLAMMABILITY			
Flammability Rating	UL94	0.062inch/0.157cm	V0,5VA&5VB
Burning Rate	ASTM D635	Self Extinguishing	Self Extinguishing
Flame spread	ASTM E84	15	-
Smoke developed	ASTM E84	70-125	-
Limiting oxygen index	ASTM D2863	60%	-
ELECTRICAL			
Dielectric Strength	ASTM D147	1250V/mil	492,000V/cm
Dielectric Constant @ 60Hz, -1°C	ASTM D150	3.7	3.7
Power Factor @ 1000 Hz	ASTM D150	0.007%	0.007%
Volume Resistivity @ 23°C	ASTM D257	3.4x10 ¹⁵ ohm/cm	3.4x10 ¹⁵ ohm/cm

Note: Above values are typical values. It should be used as a general recommendation. Do not consider as a specification



TECHNICAL DETAILS

Nominal Size			Outside Diameter, Inch (mm)				Wall Thickness, Inch (mm)				Pipe Pr. R. psi (kg/cm ²)			
cm	(mm)	in.	Average		Tolerance		Minimum		Tolerance		73.4°F	(23°C)	180°F	(82°C)
Outside Diameters and Wall Thicknesses For CPVC 4120, SDR 11 Plastic Pipe As Per ASTM D-2846 & conforming to IS: 15778														
1.5	(15)	½*	0.625	(15.9)	± 0.003	(0.08)	0.068	(1.73)	+ 0.020	(0.51)	400	(28.1)	100	(7.0)
2.0	(20)	¾	0.875	(22.2)	± 0.003	(0.08)	0.080	(2.03)	+ 0.020	(0.51)	400	(28.1)	100	(7.0)
2.5	(25)	1	1.125	(28.6)	± 0.003	(0.08)	0.102	(2.59)	+ 0.020	(0.51)	400	(28.1)	100	(7.0)
3.2	(32)	1¼	1.375	(34.9)	± 0.003	(0.08)	0.125	(3.18)	+ 0.020	(0.51)	400	(28.1)	100	(7.0)
4.0	(40)	1½	1.625	(41.3)	± 0.004	(0.10)	0.148	(3.76)	+ 0.020	(0.51)	400	(28.1)	100	(7.0)
5.0	(50)	2	2.125	(54.0)	± 0.004	(0.10)	0.193	(4.90)	+ 0.023	(0.58)	400	(28.1)	100	(7.0)

* For ½" wall thickness minimum is not a function of SDR.

Pr. R. = Pressure Rating

Nominal Size			Outside Diameter, Inch (mm)				Wall Thickness, Inch (mm)				Pipe Pr. R. psi (kg/cm ²)			
cm	(mm)	in.	Average		Tolerance		Minimum		Tolerance		73.4°F	(23°C)	180°F	(82°C)
Outside Diameters and Wall Thicknesses For CPVC 4120, SDR 13.5 Plastic Pipe conforming to IS: 15778														
1.5	(15)	½*	0.625	(15.9)	± 0.003	(0.08)	0.055	(1.40)	+ 0.020	(0.51)	320	(22.5)	80	(5.6)
2.0	(20)	¾	0.875	(22.2)	± 0.003	(0.08)	0.065	(1.65)	+ 0.020	(0.51)	320	(22.5)	80	(5.6)
2.5	(25)	1	1.125	(28.6)	± 0.003	(0.08)	0.083	(2.12)	+ 0.020	(0.51)	320	(22.5)	80	(5.6)
3.2	(32)	1¼	1.375	(34.9)	± 0.003	(0.08)	0.102	(2.59)	+ 0.020	(0.51)	320	(22.5)	80	(5.6)
4.0	(40)	1½	1.625	(41.3)	± 0.004	(0.10)	0.120	(3.06)	+ 0.020	(0.51)	320	(22.5)	80	(5.6)
5.0	(50)	2	2.125	(54.0)	± 0.004	(0.10)	0.157	(4.00)	+ 0.023	(0.58)	320	(22.5)	80	(5.6)

* For ½" wall thickness minimum is not a function of SDR.

Pr. R. = Pressure Rating

Nominal Size			Outside Diameter, Inch (mm)				I.D. Inch (mm)		Wall Thickness, Inch (mm)				Pipe Pr. R. psi (kg/cm ²)	
cm	(mm)	in.	Average		Tolerance		Average		Minimum		Tolerance		73.4°F	(23°C)
Outside Diameters, Wall Thickness & Pressure Rating For CPVC 4120, Schedule 40 Piping System As per ASTM F 441														
6.5	(65)	2½	2.875	(73.0)	± 0.007	(0.18)	2.444	(62.07)	0.203	(5.16)	+ 0.024	(0.61)	300	(21.10)
8.0	(80)	3	3.500	(88.9)	± 0.008	(0.20)	3.041	(77.26)	0.216	(5.49)	+ 0.026	(0.66)	260	(18.28)
10.0	(100)	4	4.500	(114.3)	± 0.009	(0.23)	3.998	(101.55)	0.237	(6.02)	+ 0.028	(0.71)	220	(15.47)

Pr. R. = Pressure Rating

Nominal Size			Outside Diameter, Inch (mm)				I.D. Inch (mm)		Wall Thickness, Inch (mm)				Pipe Pr. R. psi (kg/cm ²)	
cm	(mm)	in.	Average		Tolerance		Average		Minimum		Tolerance		73.4°F	(23°C)
Outside Diameters, Wall Thickness & Pressure Rating For CPVC 4120, Schedul 80 Piping System As per ASTM F 441														
6.5	(65)	2½	2.875	(73.0)	± 0.007	(0.18)	2.288	(58.14)	0.276	(7.01)	+ 0.033	(0.84)	420	(29.53)
8.0	(80)	3	3.500	(88.9)	± 0.008	(0.20)	2.864	(72.75)	0.300	(7.62)	+ 0.036	(0.91)	370	(26.01)
10.0	(100)	4	4.500	(114.3)	± 0.009	(0.23)	3.778	(95.97)	0.337	(8.56)	+ 0.040	(1.02)	320	(22.50)
15.0	(150)	6	6.625	(168.3)	± 0.011	(0.28)	5.710	(145.04)	0.432	(10.97)	+ 0.052	(1.32)	280	(19.69)
20.0	(200)	8	8.625	(219.1)	± 0.015	(0.38)	7.565	(192.15)	0.500	(12.70)	+ 0.060	(1.52)	250	(17.57)
25.0	(250)	10	10.750	(273.1)	± 0.015	(0.38)	9.493	(241.12)	0.593	(15.06)	+ 0.071	(1.80)	230	(16.17)
30.0	(300)	12	12.750	(323.90)	± 0.015	(0.38)	11.294	(286.87)	0.687	(17.45)	+ 0.082	(2.08)	230	(16.17)

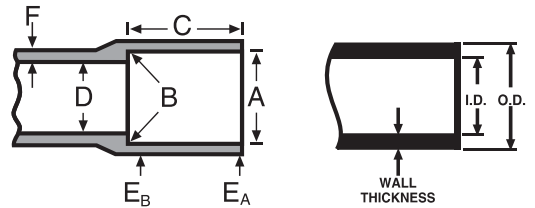
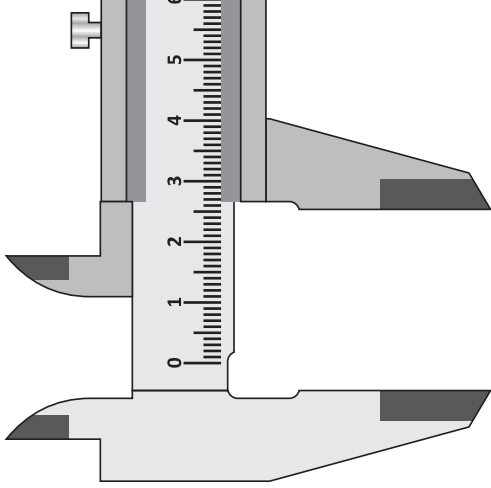
Pr. R. = Pressure Rating

Temperature Derating Factors

Working Temperature (°F)	73-80	90	100	120	140	160	180	200
Working Temperature (°C)	23-25	32	38	49	60	71	82	93
Pipe Derating Factor	1.00	0.91	0.82	0.65	0.50	0.40	0.25	0.20
Valve Derating Factor	1.00	0.95	0.90	0.80	0.70	0.61	0.53	0.45

N.B.: For obtaining working pressure in system, multiply the maximum pressure with derating factor at the working temperature of system.

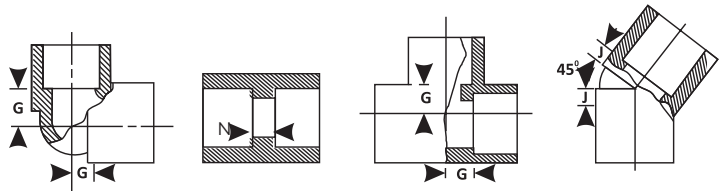
* Valves, Unions & Speciality Products have different elevates temperature rating than pipe.



Nominal Size		Socket Entrance Diameter inch (mm)		Socket Bottom Diameter inch (mm)		Socket Length inch (mm)	Inside Diameter inch (mm)	Wall Thickness in (mm)		
(in.)	(mm)	'A' Average	'A' Tolerance	'B' Average	'B' Tolerance	'C' min.	'D' min.	'E _A ' min.	'E _B ' min.	'F' min.

Tapered Socket Dimensions For CPVC 4120, SDR 11, Plastic Pipe Fittings AS PER ASTM D2846

½	(15)	0.633	(16.08)	±0.003	(0.08)	0.619	(15.72)	±0.003	(0.08)	0.500	(12.70)	0.489	(12.42)	0.068	(1.73)	0.102	(2.59)	0.128	(3.25)
¾	(20)	0.884	(22.45)	±0.003	(0.08)	0.870	(22.10)	±0.003	(0.08)	0.700	(17.78)	0.715	(18.16)	0.080	(2.03)	0.102	(2.59)	0.128	(3.25)
1	(25)	1.135	(28.83)	±0.003	(0.08)	1.121	(28.47)	±0.003	(0.08)	0.900	(22.86)	0.921	(23.39)	0.102	(2.59)	0.102	(2.59)	0.128	(3.25)
1¼	(32)	1.386	(35.20)	±0.003	(0.08)	1.372	(34.85)	±0.003	(0.08)	1.100	(27.94)	1.125	(28.58)	0.125	(3.18)	0.125	(3.18)	0.156	(3.96)
1½	(40)	1.640	(41.66)	±0.004	(0.10)	1.622	(41.20)	±0.004	(0.10)	1.300	(33.02)	1.329	(33.76)	0.148	(3.76)	0.148	(3.76)	0.185	(4.70)
2	(50)	2.141	(54.38)	±0.004	(0.10)	2.123	(53.92)	±0.004	(0.10)	1.700	(43.18)	1.739	(44.17)	0.193	(4.90)	0.193	(4.90)	0.241	(6.12)



Nominal Size		Threads (Per Inch)	Effective Thread Length (L) inch	Pitch of Thread (P) inch
(mm)	(in.)			

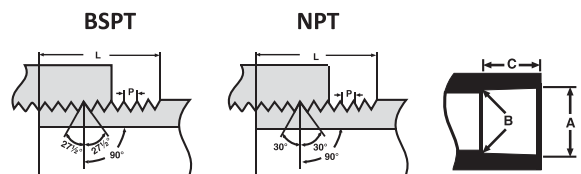
American National Standard Taper Pipe Threads (NPT) Ansi Standard B1.20.1 ASTM Standard F1498

15	½	14	0.5337	0.07143
20	¾	14	0.5457	0.07143
25	1	11½	0.6828	0.08696
32	1¼	11½	0.7068	0.08696
40	1½	11½	0.7235	0.08696
50	2	11½	0.7565	0.08696
65	2½	8	1.1375	0.12500
80	3	8	1.2000	0.12500
100	4	8	1.3000	0.12500

Nominal Size		(G) min. inch	(J) min. inch	(N) min. inch
(mm)	(in.)			

Minimum Dimensions from Center to End of Socket (Laying Length) for CPVC 4120, SDR 11 Plastic Tubing Fittings* Per ASTM D 2846

15	½	0.382	0.183	0.102
20	¾	0.507	0.235	0.102
25	1	0.633	0.287	0.102
32	1¼	0.758	0.339	0.102
40	1½	0.884	0.391	0.102
50	2	1.134	0.495	0.102



Nominal Size		Threads (Per Inch)	Effective Thread Length (L) mm	Pitch of Thread (P) mm
(mm)	(in.)			

BSP ISO 7/1 Parallel Threads

15	½	14	13.152	1.8143
20	¾	14	14.514	1.8143
25	1	11	16.714	2.3091
32	1¼	11	19.050	2.3091
40	1½	11	19.050	2.3091
50	2	11	23.378	2.3091
65	2½	11	26.698	2.3091
80	3	11	29.873	2.3091
100	4	11	35.791	2.3091

Nominal Size		Diameter (in)			Socket Length Minimum C (in)	
(mm)	(in.)	Socket Entrance A	Socket Bottom B	Tolerance	SCH 40	SCH 80

Basic Socket Dimensions Schedule 40 CPVC Fittings As Per ASTM F 438 Schedule 80 CPVC Fittings As Per ASTM F 439

65	2½	2.889	2.868	±0.007	1.750	1.750
80	3	3.516	3.492	±0.008	1.875	1.875
100	4	4.518	4.491	±0.009	2.000	2.250
150	6	6.647	6.614	±0.011	3.000	3.000
200	8	8.655	8.610	±0.015	4.000	4.000
250	10	10.780	10.735	±0.015	5.000	5.000
300	12	12.780	12.735	±0.015	6.000	6.000

FLUID HANDLING CHARACTERISTICS OF ASTRAL CPVC PRO PIPES

LINEAR FLUID FLOW VELOCITY

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

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

Where V = Linear fluid flow velocity in feet per second

g = Flow rate in gallons per minute

d = Inside diameter of pipe in inches

The values in the following tables are based on this formula. These values are accurate for all fluids.

Linear fluids flows velocity in a system should generally be limited to 5 ft/s, particularly for pipe size 6" and grater. Following this guideline will minimize risk of hydraulic shock damage due to water hammer surge pressures.

FRICTION LOSS IN PIPES

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

The Hazen-Willims formula is the generally accepted method of calculating friction head losses in piping systems. The values in the following fluid tables are based on this formula and a surface roughness constants for other piping materials are given beside:

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

Where f = Friction head in feet of water per 100 feet of pipe

d = Inside diameter of pipe in inches

g = Flow rate in gallons per minute

c = pipe surface roughness constant

CONSTANT (C) TYPE OF PIPE

150	-	CPVC pipe, new-40 years old
130-140	-	steel / cast iron pipe, new
125	-	steel pipe, old
120	-	cast iron, 4 - 12 years old galvanized steel
100	-	cast iron, 13 - 20 years old
60 - 80	-	cast iron, worn / pitted

FRICTION LOSS IN FITTINGS

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

Nominal Size (in.)	90° Standard Elbow (feet)	45° Standard Elbow (feet)	Standard Tee Run Flow (feet)	Standard Tee Branch Flow (feet)
½	1.55	0.83	1.04	3.11
¾	2.06	1.10	1.37	4.12
1	2.62	1.40	1.75	5.25
1¼	3.45	1.84	2.30	6.90
1½	4.03	2.15	2.68	8.05
2	5.17	2.76	3.45	10.30
2½	6.10	3.30	4.10	12.20
3	7.60	4.10	5.10	15.20
4	10.00	5.30	6.70	20.00
6	15.10	8.00	10.10	30.20
8	19.90	10.60	13.20	39.70
10	24.90	13.30	16.60	49.90
12	29.70	15.90	19.80	59.40

WATER HAMMER SURGE PRESSURE

Whenever the flow rate of fluid in a pipe is changing, there is a surge in pressure known as water hammer, The longer the line and the faster the fluid is moving, the greater the hydraulic shock will be. Water hammer may be caused by opening or closing a valve, starting or stopping a pump, or the movement of entrapped air through the pipe. The maximum water hammer surge pressure may be calculated from :

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

Where Pwh= Maximum surge pressure, psi

ρ = Fluid density

ΔV = Change in fluid velocity

g_c = Gravitational constant

K = Bulk modulus of elasticity of fluid

b = Pipe wall thickness

E = Pipe material bulk modulus of elasticity

d = Pipe inside diameter

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

THE WATER HAMMER SURGE PRESSURE PLUS THE SYSTEM OPERATING PRESSURE SHOULD NOT EXCEED THE RECOMMENDED WORKING PRESSURE RATING OF THE SYSTEM.

In order to minimize hydraulic shock due to water hammer, linear fluid flow velocity should generally be limited to 5ft/s. Velocity at system start-up should be limited to 1 ft/s during filling until it is certain that all air has been flushed from the system and pressure has been brought up to operating conditions. Pump should not be allowed to draw in air.

Where necessary, extra protective equipment may be used to prevent water hammer damage, such equipment might include pressure relief valves, shock absorbers, surge arrestors and vacuum air relief valves.

FRICTION LOSS AND FLOW VELOCITY FOR SDR 11 CTC CPVC THERMOPLASTIC PIPE

(Friction head and Friction Loss are per 100 feet of pipe)

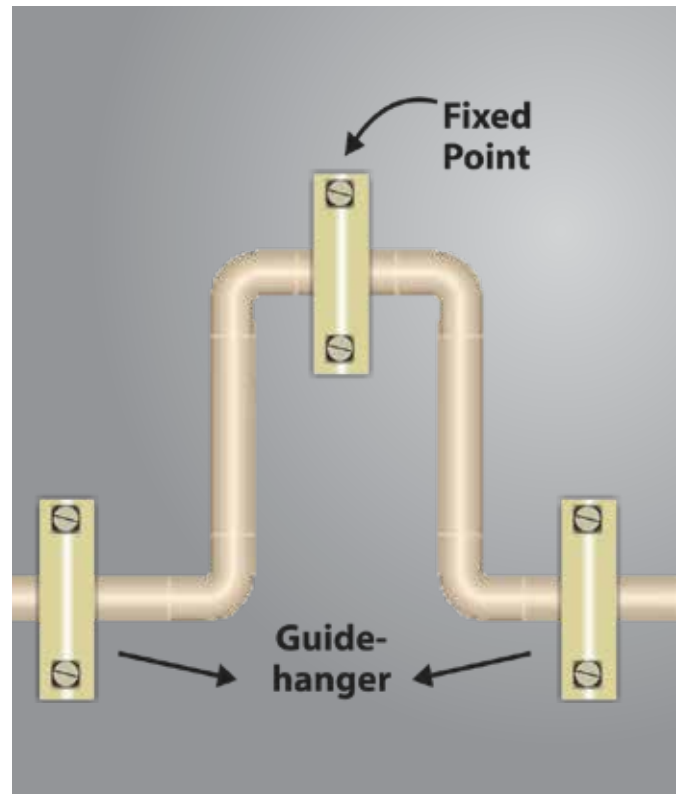
Gallons Per Minute	½ in			¾ in			1 in			1¼ in			1½ in			2 in		
	Flow Velocity (Feet Per Second)	Friction Head Loss (Ft. of Water Per 100 Ft.)	Friction Pressure Loss (PSI Per 100 Ft.)	Flow Velocity (Feet Per Second)	Friction Head Loss (Ft. of Water Per 100 Ft.)	Friction Pressure Loss (PSI Per 100 Ft.)	Flow Velocity (Feet Per Second)	Friction Head Loss (Ft. of Water Per 100 Ft.)	Friction Pressure Loss (PSI Per 100 Ft.)	Flow Velocity (Feet Per Second)	Friction Head Loss (Ft. of Water Per 100 Ft.)	Friction Pressure Loss (PSI Per 100 Ft.)	Flow Velocity (Feet Per Second)	Friction Head Loss (Ft. of Water Per 100 Ft.)	Friction Pressure Loss (PSI Per 100 Ft.)	Flow Velocity (Feet Per Second)	Friction Head Loss (Ft. of Water Per 100 Ft.)	Friction Pressure Loss (PSI Per 100 Ft.)
1	1.71	3.19	1.38	0.80	0.50	0.22	0.48	0.15	0.06	1.61	1.09	0.47	1.16	0.49	0.21	0.68	0.13	0.06
2	3.42	11.53	5.00	1.60	1.82	0.79	0.96	0.53	0.23	2.89	4.05	1.76	2.31	1.75	0.76	1.35	0.49	0.21
3	5.16	24.43	10.59	2.40	3.85	1.67	1.44	1.12	0.49	4.29	5.39	2.34	3.47	3.71	1.61	2.03	1.03	0.45
4	6.83	41.62	18.04	3.20	6.55	2.84	1.93	1.91	0.83	6.02	8.59	3.72	4.63	6.33	2.74	2.70	1.76	0.76
5	8.54	62.91	27.27	4.00	9.91	4.29	2.41	2.89	1.25	8.01	10.26	4.52	5.78	9.56	4.15	3.38	2.66	1.15
6	10.25	88.18	38.23	4.79	13.89	6.02	2.89	4.05	1.76	10.43	13.72	5.58	6.94	13.40	5.81	4.05	3.73	1.62
7	11.96	117.32	50.86	5.59	18.47	8.01	3.37	5.39	2.34	11.30	16.33	6.17	8.09	17.83	7.73	4.73	4.96	2.15
8	13.67	150.23	65.13	6.39	23.66	10.26	3.85	6.90	2.99	12.91	22.11	9.58	9.25	22.83	9.90	5.40	6.35	2.75
9	15.38	186.85	81.00	7.19	29.42	12.76	4.33	8.59	3.72	14.52	27.70	12.31	10.41	28.40	12.31	6.08	7.89	3.42
10	17.08	227.11	98.45	7.99	35.76	15.50	4.82	10.43	4.52	16.14	33.66	14.96	11.56	34.52	14.96	6.75	9.60	4.16
15				11.99	75.78	32.85	7.22	22.11	9.58	17.75	40.16	17.85	12.72	41.18	17.85	7.43	11.45	4.96
20				15.98	129.11	55.97	9.63	37.67	16.33	18.88	48.38	20.97	13.88	48.38	20.97	8.10	13.45	5.83
25							12.04	56.94	24.69	19.25	51.37	22.27	14.52	51.37	22.27	8.96	14.96	6.35
30							14.45	79.82	34.60	20.97	63.89	27.70	16.14	63.89	27.70	9.60	16.14	7.16
35							16.86	106.19	46.03	22.91	77.66	33.66	17.75	77.66	33.66	10.41	17.75	7.89
40										24.91	92.65	40.16				11.45	19.25	8.10
45										27.91	106.19	46.03				13.45	22.27	8.96
50										30.91	129.11	55.97				15.45	25.27	9.90
55										33.91	150.23	65.13				17.43	28.27	10.84
60										36.91	176.85	81.00				19.43	31.27	11.78
70										42.91	227.11	98.45				22.43	37.27	13.78
80										48.91	287.37	121.81				25.39	43.27	15.78
90										54.91	353.63	150.26				28.35	49.27	17.78
100										60.91	425.89	184.52				31.31	55.27	19.78
125										72.91	569.44	246.90				37.27	73.27	23.78

CAUTION : Flow velocity should not exceed 5 feet per second. Velocities in excess of 5 feet per second may result in system failure and property damage.

THERMAL EXPANSION AND CONTRACTION

Like all piping material, Astral CPVC PRO expands when heated and contracts when cooled. CPVC piping (regardless of pipe diameter) will expand about 1 inch per 50 feet of length when subjected to a 50° F temperature increase, therefore, allowances must be made for this resulting movement. However, laboratory testing and installation experience have demonstrated that the practical issues are much smaller than the coefficient of thermal expansion would suggest. The stresses developed in CPVC pipe are generally much smaller than those developed in metal pipe for equal temperature changes because of the difference in elastic modulus. Required loops are smaller than those recommended by the Copper Development Association for copper systems. Expansion is mainly a concern in hot water lines. Generally, thermal expansion can be accommodated with changes in direction.

However, a long straight run may require an offset or loop. Only one expansion loop, properly sized is required in any single straight run, regardless of its total length. If more convenient, two or more smaller expansion loops, properly sized, can be utilized in a single run of pipe to accommodate the thermal movement. Be sure to hang pipe with smooth straps that will not restrict movement. For convenience, loop (or offset) length have been calculated for different pipe sizes and different run length with a temperature increase (DT) of about 80°F. The results, shown in Tables A and B, are presented simply as a handy guide for quick and easy determinations of acceptable loop length for the approximate conditions. Loop length for other temperatures and run length can be calculated utilizing the following equations :



EXPANSION LOOP FORMULA

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

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.)

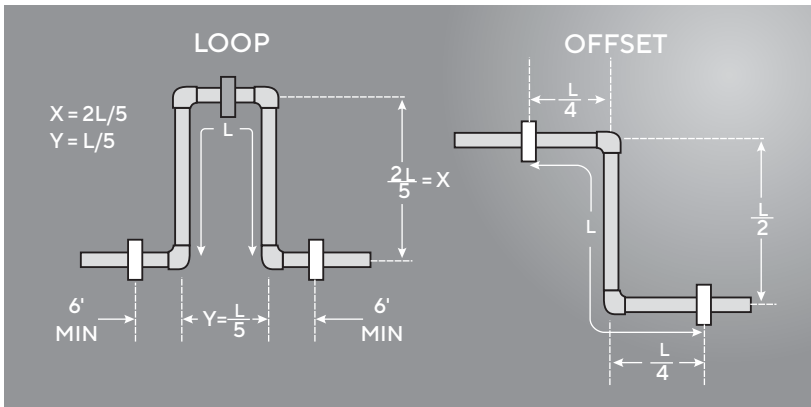
THERMAL EXPANSION FORMULA

$$\Delta L = L_p C \Delta T$$

Where:

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

THERMAL EXPANSION AND CONTRACTION



Modulus of Elasticity and Working Stress For CPVC

Temperature		Modulus, E(ksi)	Stress, S(ksi)
°F	°C		
73	(27)	423,000	2000
90	(32)	403,000	1800
110	(43)	371,000	1500
120	(49)	355,000	1300
140	(60)	323,000	1000
160	(71)	291,000	750
180	(82)	269,000	500

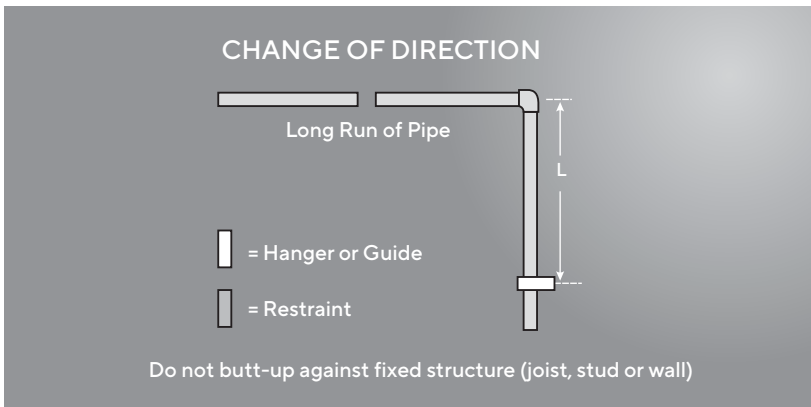


TABLE A
ASTRAL CPVC PRO pipe CTS PIPES
(ASTM D 2846)
Calculated Loop (Offset) Length with ΔT of approx. 80°F in inches

Nominal Size		Length of Run Feet			
mm	in.	40	60	80	100
15	½	22	27	31	34
20	¾	26	32	36	41
25	1	29	36	41	46
32	1¼	32	40	46	51
40	1½	35	43	50	56
50	2	40	49	57	64

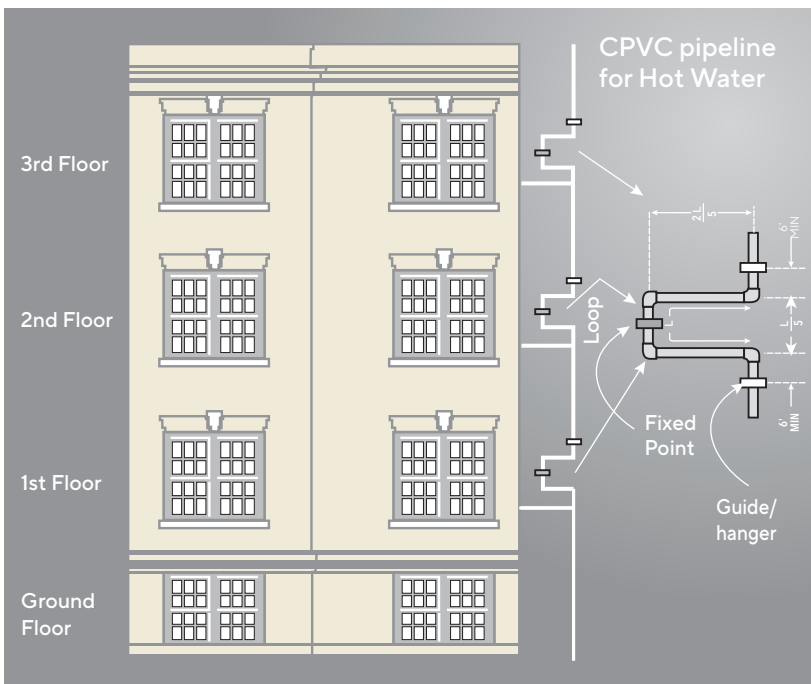


TABLE B
ASTRAL CPVC PRO IPS PIPES
(ASTM F 441)
Calculated Loop (Offset) Length with ΔT of approx. 80°F in inches

Nominal Size		Length of Run Feet			
cm	in.	40	60	80	100
65	2½	47	57	66	74
75	3	52	63	73	82
100	4	58	72	83	92
150	6	71	87	100	112
200	8	81	99	114	128
250	10	90	111	128	143
300	12	98	121	139	156

HORIZONTAL & VERTICAL SUPPORTS

Horizontal & Vertical runs of Astral CPVC PRO Pipe should be supported by pipe clamps or by hangers located on the horizontal connection close to the Riser, Hangers should not have rough or sharp edges, which come in contact with the pipe.

SPACING									
Nominal Pipe Size		21°C (70°F)		49°C (120°F)		71°C (160°F)		82°C (180°F)	
mm	in.	Ft.	(cm)	Ft.	(cm)	Ft.	(cm)	Ft.	(cm)
15	½	5.5	(167.70)	4.5	(137.16)	3.0	(91.44)	2.5	(76.20)
20	¾	5.5	(167.70)	5.0	(152.40)	3.0	(91.44)	2.5	(76.20)
25	1	6.0	(182.88)	5.5	(167.70)	3.5	(106.68)	3.5	(91.44)
32	1¼	6.5	(198.12)	6.0	(182.88)	3.5	(106.68)	3.5	(106.68)
40	1½	7.0	(213.36)	6.0	(182.88)	3.5	(106.68)	3.5	(106.68)
50	2	7.0	(213.36)	6.5	(198.12)	4.0	(121.92)	3.5	(106.68)
65	2½	8.0	(244.00)	7.5	(228.60)	4.5	(137.16)	4.0	(121.92)
80	3	8.0	(244.00)	7.5	(228.60)	4.5	(137.16)	4.0	(121.92)
100	4	9.0	(274.32)	8.5	(259.08)	5.0	(152.40)	4.5	(137.16)
150	6	10.0	(304.80)	9.0	(274.32)	5.5	(167.07)	5.0	(152.40)
200	8	11.0	(335.28)	10.0	(304.80)	6.0	(182.88)	5.5	(167.07)
250	10	11.5	(350.52)	10.5	(320.04)	6.5	(198.12)	6.0	(182.88)
300	12	12.5	(381.00)	11.0	(335.28)	7.5	(228.60)	6.5	(198.12)

Note: Above values are typical values. It should be used as a general recommendation. Do not consider as a specification.

BAND HANGER



ANCHOR STRAP



PIPE CLAMP



U-BOLT



UNDERGROUND INSTALLATION

TRENCHING

The following trenching and burial procedures should be used to protect the piping system.

1. The trench should be excavated to ensure the sides will be stable under all working conditions.
2. The trench should be wide enough to provide adequate room for the following :
 - A. Joining the pipe in the trench.
 - B. Snaking the pipe from side or side to compensate for expansion and contraction.
 - C. Filling and compacting the side fills. The space between the pipe

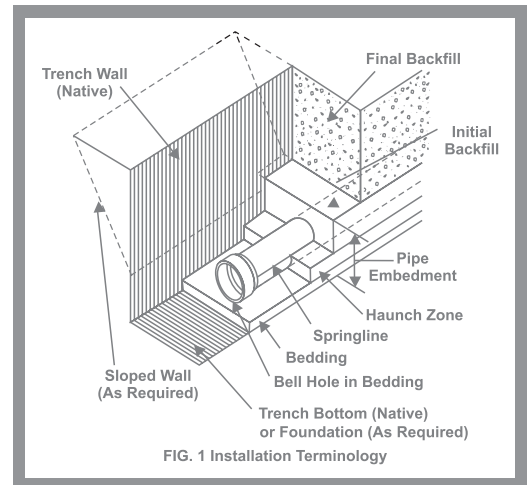
and trench wall must be wider than the compaction equipment used in the compaction of the back fill. Minimum width shall not be less than the greater of either the pipe outside diameter plus 16 inches or the pipe outside diameter times 1.25 plus 12 inches. Trench width may be different if approved by the design engineer.

3. The trench bottom should be smooth, free of rocks and debris, continuous and provide uniform support. If ledge rock, hardpan or large boulders are encountered, the trench bottom should be padded with bedding of compacted granular material to a thickness of at least 4 inches. Foundation bedding should be installed as required by the engineer.
4. Trench depth is determined by the pipe's service requirements. Plastic pipe should always be installed at least below the frost level. The minimum cover for lines subject to heavy overhead traffic is 24 inches.
5. A smooth trench bottom is necessary to support the pipe over its entire length on firm stable material. Blocking should not be used to change pipe grade or to intermittently support pipe over low sections in the trench.

CPVC pipes and fittings can be installed underground. Since these piping systems are flexible systems, proper attention should be given to burial conditions. The stiffness of the piping system is affected by sidewall support, soil compaction, and the condition of the trench. Trench bottoms should be smooth and regular in either undisturbed soil or a layer of compacted backfill. Pipe must lie evenly on this surface throughout the entire length of its barrel. Excavation, bedding and backfill should be in accordance with the provision of the local Plumbing Code having jurisdiction.

BEDDING AND BACKFILLING

1. Even though sub-soil conditions vary widely from place to place, the pipe backfill should be stable and provide protection for the pipe.
2. The pipe should be surrounded with a granular material which is easily worked around the sides of the pipe. Backfilling should be performed in layer of 6 inch with each layer being sufficiently compacted to 85% to 95% compaction.
3. A mechanical tamper is recommended for compacting sand and gravel backfill which contain a significant proportion of fine grained material, such as silt and clay. If a tamper is not available, compacting should be done by hand.
4. The trench should be completely filled. The backfill should be placed and spread in fairly uniform layers to prevent any unfilled spaces or voids.



REQUIREMENT OF THERMALLY INSULATED CPVC PIPE

CPVC has much lower thermal conductivity than metals used in piping systems (0.14W / mk for CPVC versus >400 W / mk for copper).

For this reason in most cases it is not necessary to thermally insulate CPVC piping. However the equation below can be used to calculate the approximate heat loss from CPVC pipes 1 meter length of pipe.

$$Q = \frac{\lambda}{e} \cdot \left[\frac{d_i + d_o}{2} \right] \cdot \Delta T$$

Where

- Q = Heat loss per meter of pipe, W/m
- λ = Thermal conductivity. [W/mk] for CPVC, λ = 0.14 w/mk
- e = Thickness of pipe, mm
- = 3.1416
- d_i = Inside diameter, mm
- d_o = Outside diameter, mm
- ΔT = Temperature differential between inner and outer surface of pipe.
This can be approximated to: T_{water} - T_{ambient} (K)

EXAMPLE

What is the heat loss/meter from a 20mm outside diameter CPVC pipe. wall thickness 2,3mm, with water flowing inside at 80°C and an ambient air temperature of 25°C?

$$Q = \frac{0.14}{2.3} \cdot 3.1416 \cdot \left[\frac{15.4 + 20}{2} \right] \cdot (80 - 25)$$

= 186 W/m

$$Q = K \Delta T$$

Equation (1) can be simplified for standard pipe dimensions to:

Where K is a conductivity of CPVC and the pipe geometry in the previous example. d_o = 20mm, and e = 2.3mm

$$Q = \frac{0.14}{2.3} \cdot 3.1416 \cdot \left[\frac{15.4 + 20}{2} \right] \cdot = 3.38 \text{ (W/m)}$$

HANDLING

The pipe should be handled with reasonable care because thermoplastic pipe is much lighter in weight than metal pipe, there is sometimes a tendency to throw it around. This should be avoided.

The pipe should never be dragged or pushed from a truck bed. Pallets for pipe should be removed with a fork lift. Loose pipe can be rolled down timbers as long as the pieces do not fall on each other or on any hard or uneven surface. In all cases, severe contact with any sharp objects (rocks, angle irons, forks on forklifts, etc.) should be avoided.

STORAGE

If possible, pipe should be stored inside. When this is not possible, the pipe should be stored on level ground which is dry and free from sharp objects. If different schedules of pipes are stacked together, the pipes with the thickest walls should be at the bottom.

The pipes should be protected from the sun and be in an area with proper ventilation. This will lessen the effects of ultraviolet rays and help prevent heat built-up.

If the pipes are stored in racks, it should be continuously supported along its length. If this is not possible, the spacing of the supports should not exceed three feet (3').

When storage temperatures are below 0°C (32°F), extra care should be taken when handling the pipe. This will help prevent any problems which could be caused by the slightly lower impact strength of PVC pipes at temperature below freezing.



PRODUCT



ASTRAL
CPVC PRO®

RANGE

CPVC PRO PIPE & FITTINGS

CTS - COPPER TUBE SIZE AS PER ASTM D2846



IS:15778



Only those products bearing the above marks are certified



**PIPE SDR-11
(3 METRE
LENGTH)**

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
1.5	½	M511110301	100
2.0	¾	M511110302	50
2.5	1	M511110303	30
3.2	1¼	M511110304	20
4.0	1½	M511110305	15
5.0	2	M511110306	08



**PIPE SDR -13.5
(3 METRE
LENGTH)**

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
1.5	½	M511130301	100
2.0	¾	M511130302	50
2.5	1	M511130303	30
3.2	1¼	M511130304	20
4.0	1½	M511130305	15
5.0	2	M511130306	08



**PIPE SDR-11
(5 METRE
LENGTH)**

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
1.5	½	M511110501	60
2.0	¾	M511110502	40
2.5	1	M511110503	25
3.2	1¼	M511110504	15
4.0	1½	M511110505	10
5.0	2	M511110506	06

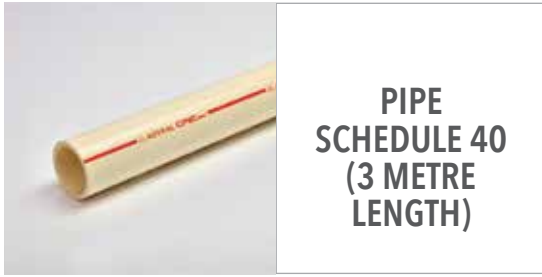


**PIPE SDR -13.5
(5 METRE
LENGTH)**

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
1.5	½	M511130501	60
2.0	¾	M511130502	40
2.5	1	M511130503	25
3.2	1¼	M511130504	15
4.0	1½	M511130505	10
5.0	2	M511130506	06

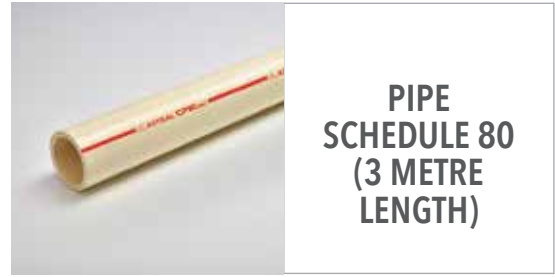
CPVC PRO PIPE & FITTINGS

IPS - IRON PIPE SIZE AS PER ASTM F441



**PIPE
SCHEDULE 40
(3 METRE
LENGTH)**

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
6.5	2½	M511400307	05
8.0	3	M511400308	03
10.0	4	M511400309	02
15.0	6	M511400310	01



**PIPE
SCHEDULE 80
(3 METRE
LENGTH)**

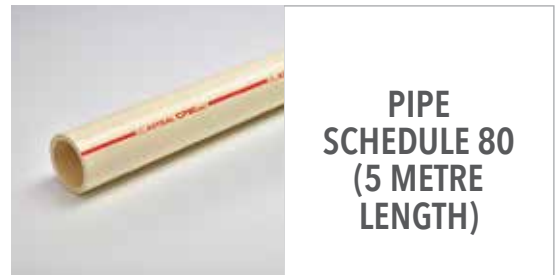
Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
6.5	2½	M511800307	05
8.0	3	M511800308	03
10.0	4	M511800309	02
15.0	6	M511800310	01
20.0	8	M511800311	01

10" and 12" pipe sizes are available on request



**PIPE
SCHEDULE 40
(5 METRE
LENGTH)**

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
6.5	2½	M511400507	05
8.0	3	M511400508	03
10.0	4	M511400509	02
15.0	6	M511400510	01



**PIPE
SCHEDULE 80
(5 METRE
LENGTH)**

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
6.5	2½	M511800507	05
8.0	3	M511800508	03
10.0	4	M511800509	02
15.0	6	M511800510	01
20.0	8	M511800511	01

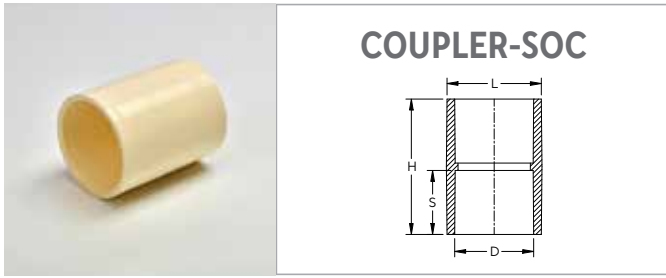
10" and 12" pipe sizes are available on request

CPVC PRO PIPE & FITTINGS

CTS - AS PER ASTM D2846

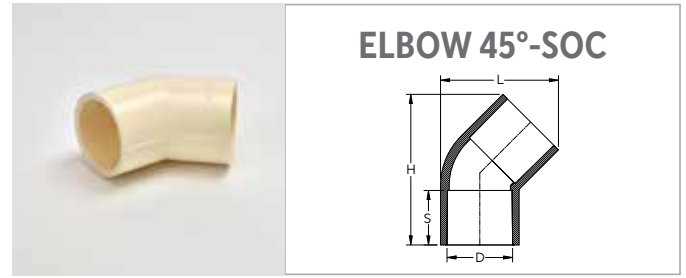


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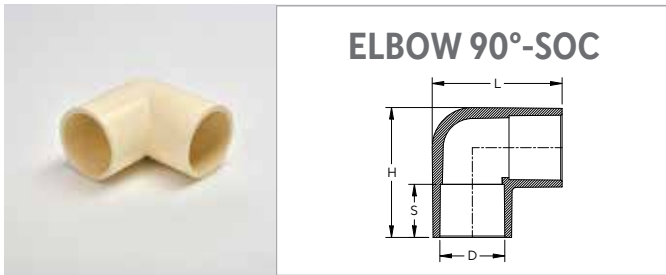
COUPLER-SOC

DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	Pkg.(Nos.)	
						Std.	Mast.
½	M512111001	29.5	20.84	13.23	16.08	100	1500
¾	M512111002	38.6	28	18	22.45	100	600
1	M512111003	49.5	35	23.4	28.83	50	600
1¼	M512111004	59.1	41.6	28	35.2	10	300
1½	M512111005	69	49.3	33.1	41.66	10	200
2	M512111006	90	64.2	43.2	54.38	10	50



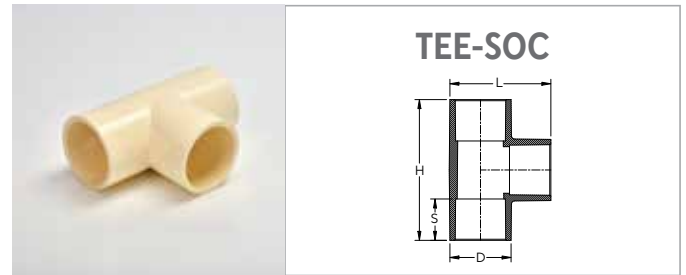
ELBOW 45°-SOC

DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	Pkg.(Nos.)	
						Std.	Mast.
½	M512112301	38.88	31.09	13.4	16.08	100	500
¾	M512112302	51	40.76	18.8	22.45	100	200
1	M512112303	66.33	51.94	24	28.83	50	250
1¼	M512112304	78	62.12	29.1	35.2	10	60
1½	M512112305	91.93	73.18	33.6	41.66	10	40
2	M512112306	118.89	64.38	43.56	54.38	05	15



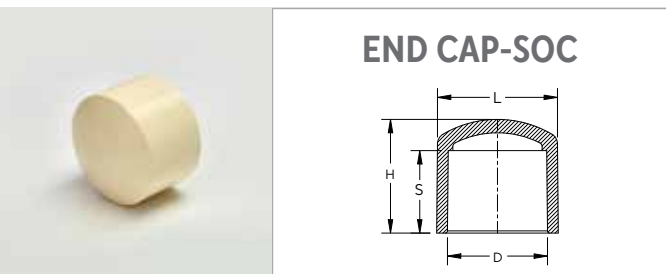
ELBOW 90°-SOC

DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	Pkg.(Nos.)	
						Std.	Mast.
½	M512110501	33.9	33.9	13.2	16.08	100	1000
¾	M512110502	45.58	45.58	18.4	22.45	50	800
1	M512110503	57.4	57.4	23.5	28.83	50	400
1¼	M512110504	58.59	58.59	28.7	35.2	10	200
1½	M512110505	80.77	80.77	33.7	41.66	10	120
2	M512110506	104.85	104.85	43.6	54.38	05	50



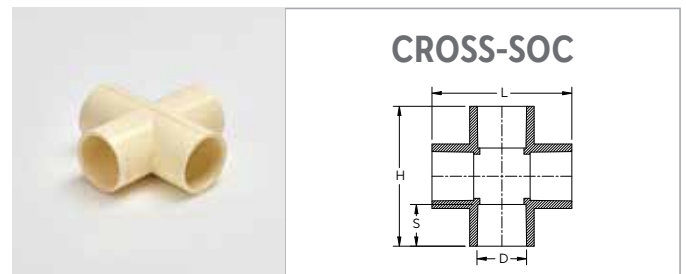
TEE-SOC

DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	Pkg.(Nos.)	
						Std.	Mast.
½	M512110101	38.88	31.09	13.4	16.08	100	800
¾	M512110102	51	40.76	18.8	22.45	50	500
1	M512110103	66.33	51.94	24	28.83	25	300
1¼	M512110104	78	62.12	29.1	35.2	10	150
1½	M512110105	91.93	73.18	33.6	41.66	10	90
2	M512110106	118.89	64.38	43.56	54.38	05	40



END CAP-SOC

DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	Pkg.(Nos.)	
						Std.	Mast.
½	M512114101	33.9	33.9	13.2	16.08	100	1000
¾	M512114102	45.58	45.58	18.4	22.45	100	500
1	M512114103	57.4	57.4	23.5	28.83	100	200
1¼	M512114104	58.59	58.59	28.7	35.2	10	120
1½	M512114105	80.77	80.77	33.7	41.66	10	100
2	M512114106	104.85	104.85	43.6	54.38	10	40



CROSS-SOC

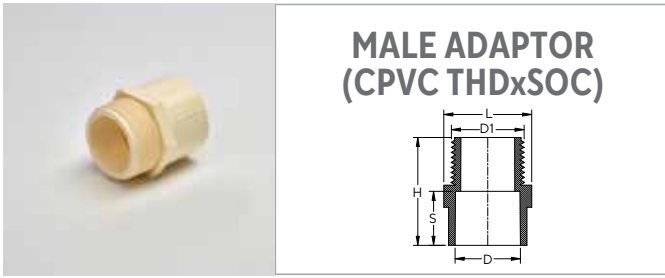
DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	Pkg.(Nos.)	
						Std.	Mast.
½	M512112401	45.6	45.6	13.6	16.08	100	200
¾	M512112402	62	62	18.5	22.45	25	100
1	M512112403	79	79	23.36	28.83	25	100

CPVC PRO PIPE & FITTINGS

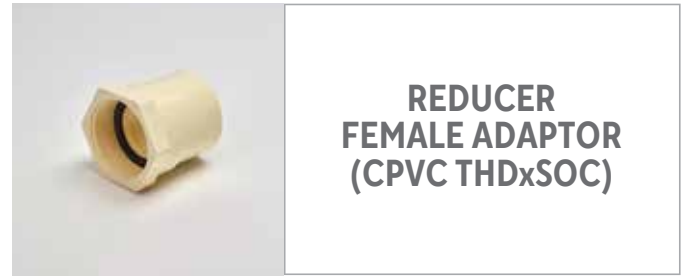
CTS - AS PER ASTM D2846



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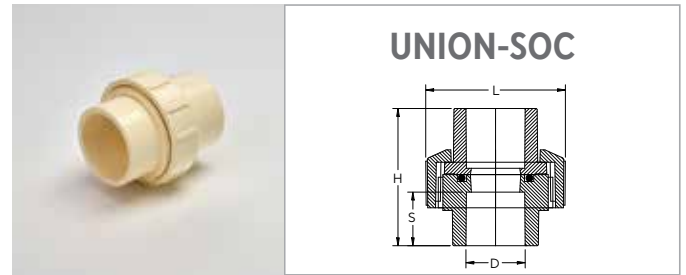
DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
							Std.	Mast.
½	M512111301	31.9	24.5	14.2	16.08	1 1/2"	100	600
¾	M512111302	41.75	31.2	18.75	22.45	3/4"	100	600
1	M512111303	47.6	38.8	23.84	28.83	1"	50	300
1¼	M512111304	54.9	47.7	28.47	35.2	1-1/4"	10	200
1½	M512111305	62.2	56.6	33.5	41.66	1-1/2"	10	100
2	M512111306	74.8	73.7	43.5	54.38	2"	10	50



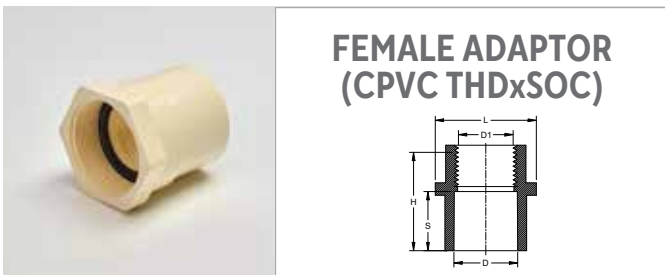
DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
							Std.	Mast.
¾ x ½	M512111614	37.5	31.0	18.0	22.45	1/2"	50	600



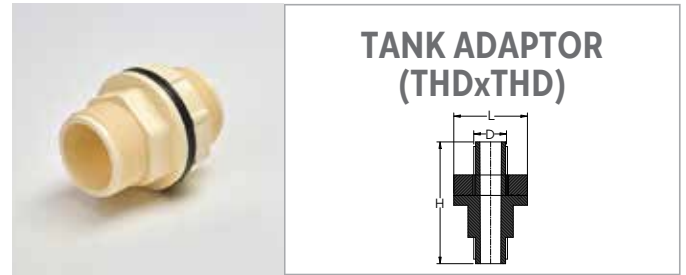
DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
							Std.	Mast.
¾ x ½	M512111314	42	30.9	18.3	22.45	1/2"	100	500
1 x ¾	M512111316	46	38.8	23.84	28.83	3/4"	50	450



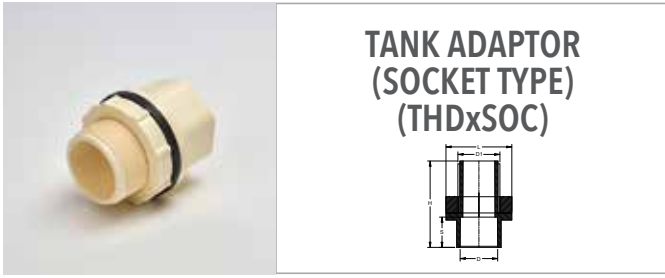
DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
							Std.	Mast.
½	M512112601	36.3	38.5	15.2	16.08	1 1/2"	30	210
¾	M512112602	52.1	53	20.4	22.45	3/4"	20	180
1	M512112603	56.8	65	23.8	28.83	1"	15	120
1¼	M512112604	63.44	66.2	28.1	35.2	1-1/4"	10	90
1½	M512112605	76.4	75	33.3	41.66	1-1/2"	10	60
2	M512112606	96.12	87.58	43.3	54.38	2"	05	30



DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
							Std.	Mast.
½	M512111601	34.8	30.2	13.2	16.08	1/2"	100	800
¾	M512111602	42	36.5	18.1	22.45	3/4"	50	500
1	M512111603	49.1	44.6	23.3	28.83	1"	50	250
1¼	M512111604	56.3	55	29.2	35.2	1-1/4"	10	150
1½	M512111605	64.2	62.5	33.5	41.66	1-1/2"	10	100
2	M512111606	75.5	78.4	43.3	54.38	2"	05	50

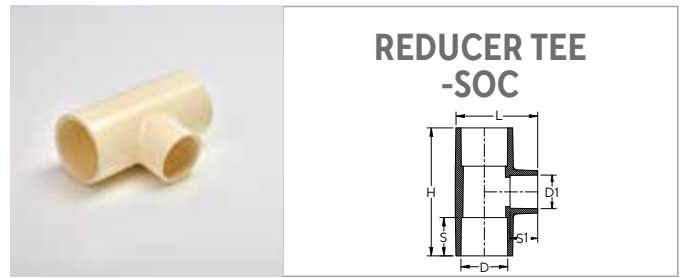


DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
							Std.	Mast.
½	M512112501	36.3	38.5	15.2	16.08	1 1/2"	10	80
¾	M512112502	52.1	53	20.4	22.45	3/4"	10	60
1	M512112503	56.8	65	23.8	28.83	1"	10	40
1¼	M512112504	63.44	66.2	28.1	35.2	1-1/4"	10	30
1½	M512112505	76.4	75	33.3	41.66	1-1/2"	10	20
2	M512112506	96.12	87.58	43.3	54.38	2"	05	15



**TANK ADAPTOR
(SOCKET TYPE)
(THDxSOC)**

DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
							Std.	Mast.
¾	M5128010202	64.5	54.5	25.6	26.87	3/4"	25	75
1	M5128010203	72	50.7	28.8	33.66	1"	20	60
1¼	M5128010204	79.35	64	32.5	42.42	1-1/4"	10	70
1½	M5128010205	87.7	70.52	35.7	48.56	1-1/2"	10	60
2	M5128010206	92	82.4	39	60.63	2"	05	35



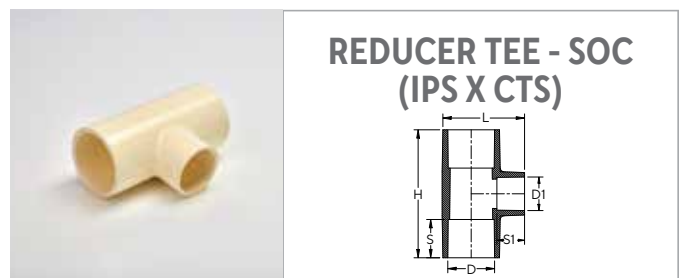
**REDUCER TEE
-SOC**

DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	S1 (mm)	D1 (mm)	Pkg.(Nos.)	
								Std.	Mast.
½ x ½ x ¾	A512110291	69	44.9	13	16.08	18.4	22.45	-	01
¾ x ½ x ¾	A512110292	65.8	44.9	18.40/13	22.45	18.4	22.45	-	01
¾ x ½ x ½	A512110293	65.8	48.1	18.40/13	22.45	13	16.08	-	01
¾ x ¾ x ½	M512110214	61.5	39.25	18.4	22.45	13.3	16.08	50	300
1 x 1 x ½	M512110215	67.5	47.1	23.6	28.83	13.3	16.08	25	300
1 x 1 x ¾	M512110216	78.75	51.36	23.8	28.83	18.5	22.45	25	75
1¼ x 1¼ x ½	M512110217	76.26	53.65	28.47	34.85	13.2	16.08	10	100
1¼ x 1¼ x ¾	M512110218	82.6	58.08	28.2	34.85	18.2	22.45	10	120
1¼ x 1¼ x 1	M512110219	88.9	63.3	28.3	34.85	23.52	28.83	10	80
1½ x 1½ x ½	M512110220	105.74	59.81	33.48	41.2	13.9	16.08	10	70
1½ x 1½ x ¾	M512110221	106	65.56	33.2	41.2	18.5	22.45	10	60
1½ x 1½ x 1	M512110222	99.12	68.7	33.36	41.2	23.31	28.83	10	30
1½ x 1½ x 1¼	M512110223	105.72	76	33.49	41.2	28	35.2	10	60
2 x 2 x ½	M512110224	106.5	75	43.47	54.38	13.55	16.08	05	30
2 x 2 x ¾	M512110225	133.6	78	43.95	54.38	18.45	22.45	05	35
2 x 2 x 1	M512110226	119	82	43.4	54.38	23.28	28.83	05	15
2 x 2 x 1¼	M512110227	133.45	89	44.1	54.38	28	35.2	05	30
2 x 2 x 1½	M512110228	133	93.25	43.2	54.38	33.18	41.66	05	25



**TANK ADAPTOR
(SPIGOT TYPE)
(THDxSPG)**

DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
							Std.	Mast.
½	M052806501	90	45	40	21.34	1/2"	25	200
¾	M052806502	105	50	50	26.67	3/4"	20	140
1	M052806503	127	55	60	33.4	1"	20	80
1¼	M052806504	167	65	75	42.16	1-1/4"	10	40
1½	M052806505	170	70	75	48.26	1-1/2"	05	30
2	M052806506	175	82	80	60.32	2"	05	20



**REDUCER TEE - SOC
(IPS X CTS)**

DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
							Std.	Mast.
2½ x 1	A5121110031*	166	139	45.7	73.38	28.83	-	01
2½ x 1½	M5121110033	174	119	48.6	73.38	41.66	-	15
2½ x 2	M5121110034	174	124	48.6	73.38	54.38	-	12
3 x 1	A5121110037*	195	161	48.4	89.31	28.83	-	01
3 x 1½	M5121110039	196	137.5	50	89.31	41.66	-	10
3 x 2	M5121110040	196	140.5	50	89.31	54.38	-	10
4 x 1½	M5121110046	240	162.3	58	114.76	41.66	-	05
4 x 2	M5121110047	240	165.32	58	114.76	54.38	-	05
6 x 2	A5121110055*	350	285	78.2	168.83	54.38	-	01



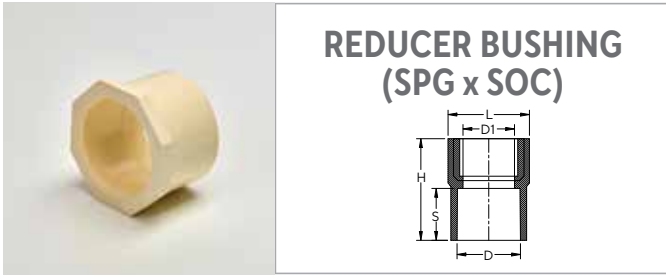
**REDUCER
ELBOW 90°-SOC**

DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	S1 (mm)	D1 (mm)	Pkg.(Nos.)	
								Std.	Mast.
½	M512110614	39.54	40.8	18.5	22.45	13.5	16.08	100	500
¾	M512110615	45.14	48.35	23.5	28.83	13.5	16.08	50	350
1	M512110616	51.38	53.35	23.5	28.83	18.5	22.45	50	300
1¼	A512110617	68.5	71.8	28.5	35.2	13.2	16.08	-	01
1½	M512110618	61.6	58	28.13	35.2	18	22.45	25	175
2	M512110619	61.6	63.95	28.13	35.2	23	28.83	25	150
	A512110626	104.9	108.25	43.6	54.38	23.2	28.83	-	01

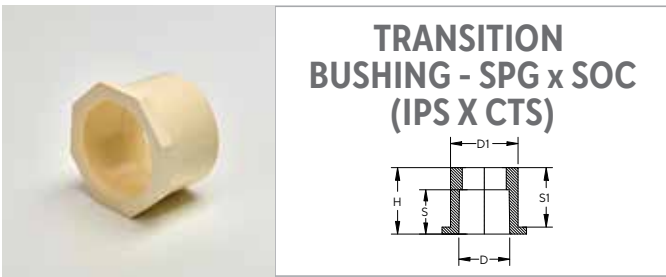
* Reducer fittings are professionally assembled using Astral fittings and bushings. Quantity as per order.
Note: Fabricated reducer fittings are not eligible for return to the manufacturer. SOC - SOCKET, SPG - SPIGOT, THD - THREADED
All the items where product code starts with "A" are assembled items.

CPVC PRO PIPE & FITTINGS

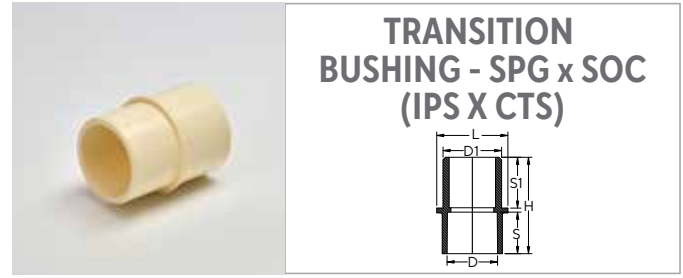
CTS - AS PER ASTM D2846



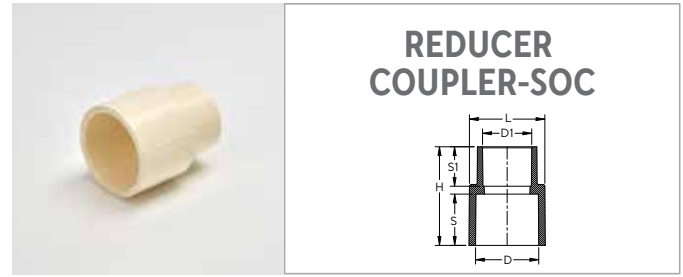
DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	S1 (mm)	D1 (mm)	Pkg.(Nos.)	
								Std.	Mast.
¾ x ½	M512111914	21.5	26.7	13	16.08	18.3	22.2	100	1000
1 x ½	M512111915	26.6	34.5	13.1	16.08	23.3	28.6	100	600
1 x ¾	M512111916	26.6	34.5	18.6	22.45	23.3	28.6	100	800
1¼ x ½	M512111917	31.5	41.8	13.2	16.08	28.2	34.9	10	300
1¼ x ¾	M512111918	31.5	41.8	18	22.45	28.2	34.9	10	300
1¼ x 1	M512111919	31.5	41.8	23.2	28.83	28.2	34.9	10	300
1½ x ½	M512111920	36.4	49.5	13.1	16.08	33.1	41.3	10	200
1½ x ¾	M512111921	36.4	49.5	18	22.45	33.1	41.3	10	200
1½ x 1	M512111922	36.4	49.5	23	28.83	33.1	41.3	10	200
1½ x 1¼	M512111923	36.4	49.5	28.2	35.2	33.1	41.3	10	200
2 x ½	M512111924	46.8	64.6	13.2	16.08	43.5	54	10	100
2 x ¾	M512111925	46.8	64.6	18.2	22.45	43.5	54	10	150
2 x 1	M512111926	46.8	64.6	23.2	28.83	43.5	54	10	100
2 x 1¼	M512111927	46.8	64.6	28.3	35.2	43.5	54	10	100
2 x 1½	M512111928	46.8	64.6	33.5	41.66	43.5	54	10	100



DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	S1 (mm)	D1 (mm)	Pkg.(Nos.)	
								Std.	Mast.
6.5 X 2.5	A512112131	58	79.3	23.2	28.83	45	73	-	01
6.5 x 4.0	M512112133	54	79.3	34	41.66	45	73	-	01
6.5 x 5.0	M512112134	54	79.3	43.7	54.38	45	73	05	25
8.0 x 4.0	M512112139	57	95.3	34	41.66	48	89	-	01
8.0 x 5.0	M512112140	57	95.3	43.7	54.38	48	89	05	20
10.0 x 4.0	M512112146	67	120.78	34	41.66	58	114.3	-	01
10.0 x 5.0	M512112147	67	120.78	43.7	54.38	58	114.3	-	10



DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	S1 (mm)	D1 (mm)	Pkg.(Nos.)	
								Std.	Mast.
½ x ½	M512112101	21	26.74	14	16.08	18.8	21.34	100	1500
¾ x ¾	M512112102	21.8	32.3	18	22.45	18.6	26.67	100	1000
1 x 1	M512112103	55	40.6	23.7	28.83	29	33.4	50	200
1¼ x 1¼	M512112104	56	48	29	35.2	24	42.16	25	150
1½ x 1½	M512112105	73	56.8	34	41.66	36.5	48.26	10	80
2 x 2	M512112106	86.5	68.5	44	54.38	40	60.32	10	50

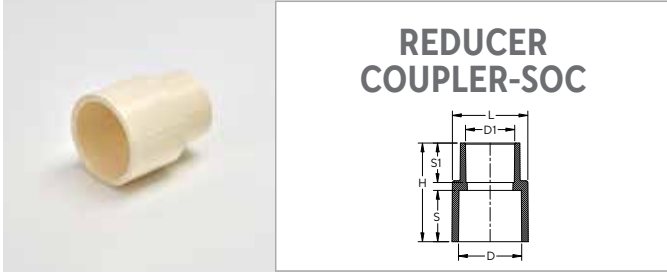


DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	S1 (mm)	D1 (mm)	Pkg.(Nos.)	
								Std.	Mast.
¾ x ½	M512111114	33.6	27.8	18.2	22.45	13.1	16.08	100	1000
1 x ½	M512111115	40.8	34.3	24	28.83	13	16.08	100	500
1 x ¾	M512111116	45	34.8	23.4	28.83	18	22.45	50	450
1¼ x ½	M512111117	43.3	41.5	28.1	35.2	13.1	16.08	50	300
1¼ x ¾	M512111118	49.5	41.7	28.2	35.2	18.2	22.45	50	300
1¼ x 1	M512111119	55	41.7	28.87	35.2	23	28.83	50	200
1½ x ½	M512111120	50.5	49.62	33.52	41.66	14.4	16.08	25	75
1½ x ¾	M512111121	55	48.98	33.7	41.66	18	22.45	25	75
1½ x 1	M512111122	60	48.98	33.7	41.66	23	28.83	25	75
1½ x 1¼	M512111123	65.3	48.98	33.87	41.66	28	35.2	25	50
2 x ½	M512111124	60	63.97	43.7	54.38	13	16.08	10	40
2 x ¾	M512111125	64.58	64.23	43.4	54.38	18.18	22.45	10	90
2 x 1	M512111126	70.5	64.16	43.7	54.38	23	28.83	10	30
2 x 1¼	M512111127	75	64.58	43.85	54.38	28.4	35.2	10	30
2 x 1½	M512111128	77.8	64.32	43.2	54.38	33.14	41.66	10	70

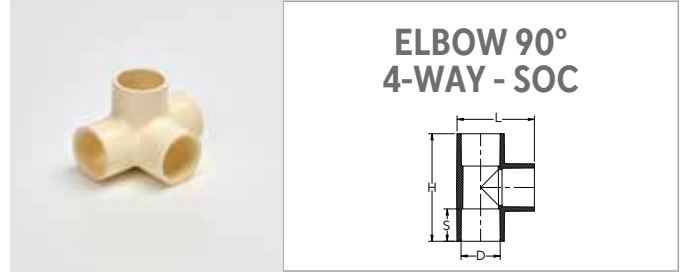
* Reducer fittings are professionally assembled using Astral fittings and bushings. Quantity as per order.
 Note: Fabricated reducer fittings are not eligible for return to the manufacturer. SOC - SOCKET, SPG - SP/GOT
 All the items where product code starts with "A" are assembled items.



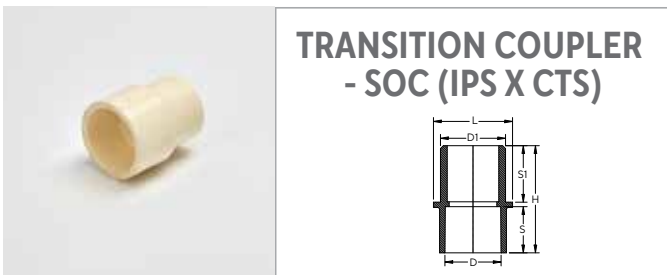
Only those products bearing the above marks are certified



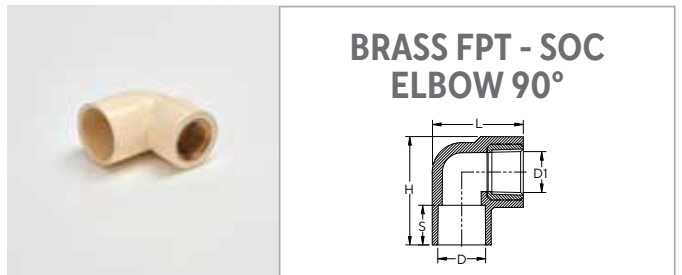
DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	S1 (mm)	D1 (mm)	Pkg.(Nos.)	
								Std.	Mast.
2½ x 1½	A5121110333	97	87.9	45.15	73.38	33.5	41.66	-	01
2½ x 2	A5121110334	102	87.9	54.15	73.38	43.7	54.38	-	01



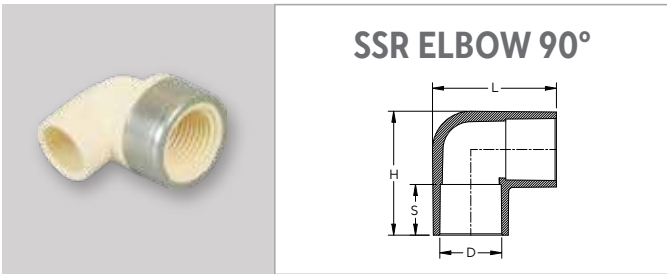
DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	Pkg.(Nos.)	
						Std.	Mast.
¾	M5121112502	61.5	44.4	18.5	22.45	50	250



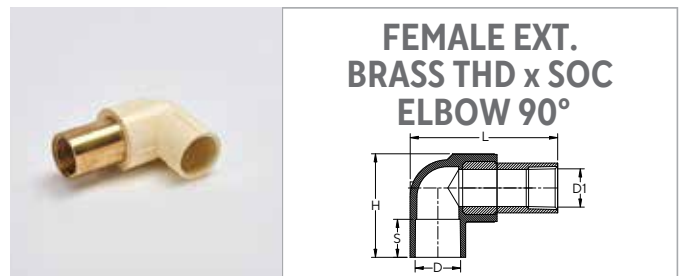
DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	S1 (mm)	D1 (mm)	Pkg.(Nos.)	
								Std.	Mast.
¾ x ¾	M512112202#	-	-	-	-	-	-	-	100
1 x 1	M512112203	49.6	41	21.8	33.66	23.6	28.83	50	200



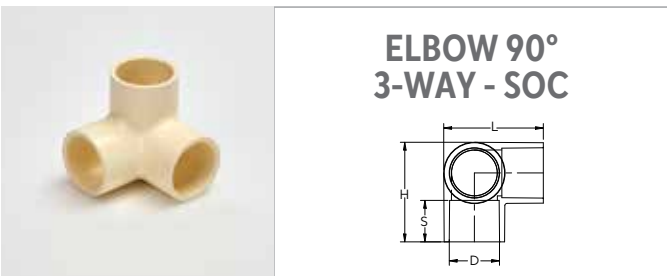
DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
							Std.	Mast.
½ x ½	M512110701	45.55	36.7	13.5	16.08	1/2"	50	200
¾ x ½	M512110714	50.72	42.7	18.6	22.45	1/2"	50	150
¾ x ¾	M512110702	54.2	42	18	22.45	¾"	25	100
1 x ½	M512110715	55.45	53.49	22.9	28.83	1/2"	25	100
1 x ¾	M512110716	60.63	50.3	23.7	28.83	¾"	25	100
1 x 1	M512110703	61.1	56	23.3	28.83	1"	25	50
1¼ x ½	M512110517	67.47	57.85	28.2	35.2	1/2"	25	75
1¼ x ¾	M512110518	69.98	59.85	28.2	35.2	¾"	30	60
1¼ x 1¼	M512110704	76	65.3	28.4	35.2	1-1/4"	10	30



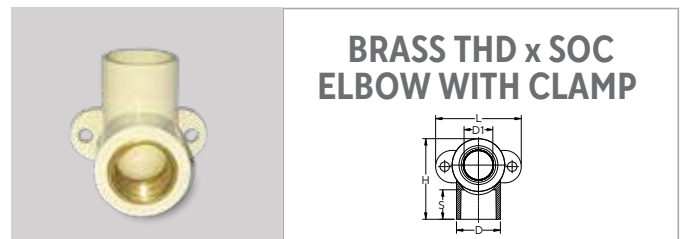
DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	S1 (mm)	D1 (mm)	Pkg.(Nos.)	
								Std.	Mast.
1.5 x 1.5	M512117501	-	-	-	-	-	-	-	200
2.0 x 1.5	M512117514	-	-	-	-	-	-	-	150



DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
							Std.	Mast.
¾ x ½	M512114723	51.2	73	18.8	22.45	1/2"	25	100



DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	Pkg.(Nos.)	
						Std.	Mast.
¾	M5121114202	44.4	44.4	18.5	22.45	50	300

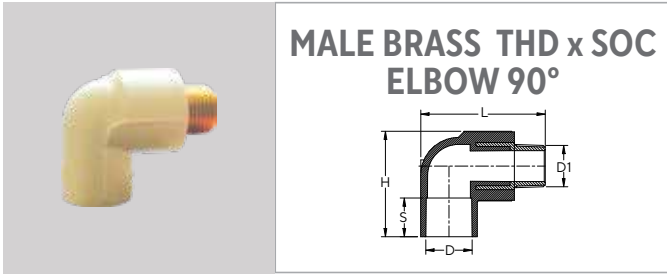


DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
							Std.	Mast.
¾ x ½	M5121114114	50	54	18.3	22.45	1/2"	100	250

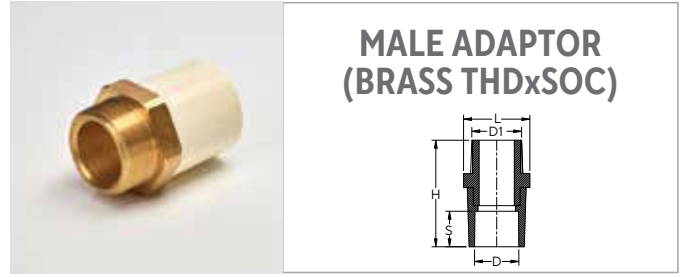
* Reducer fittings are professionally assembled using Astral fittings and bushings. Quantity as per order.
 Note: Fabricated reducer fittings are not eligible for return to the manufacturer. SOC - SOCKET
 All the items where product code starts with "A" are assembled items. # Shortly introducing

CPVC PRO PIPE & FITTINGS

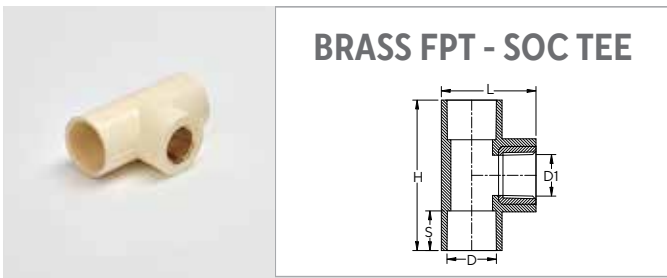
CTS - AS PER ASTM D2846



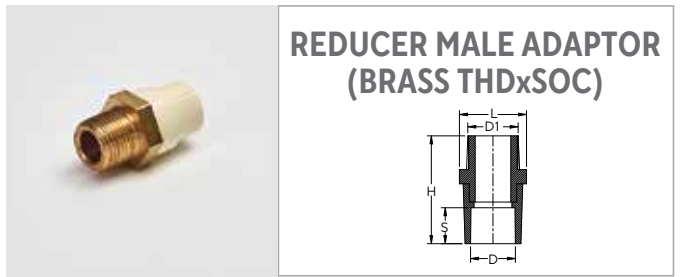
DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
							Std.	Mast.
¾ x ½	M512114823	51.2	60.5	18.8	22.45	1/2"	10	100



DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
							Std.	Mast.
½	M512111401	48.56	29.9	12.9	16.08	1/2"	50	200
¾	M512111402	54	33.6	18	22.45	3/4"	25	100
1	M512111403	71	41.8	24.8	28.83	1"	10	50
1¼	M512111404	80.55	56.4	28.5	35.2	1-1/4"	5	25
1½	M512111405	88.25	63.2	33.5	41.66	1-1/2"	5	25
2	M512111406	102.25	69.7	43.7	54.38	2"	5	15



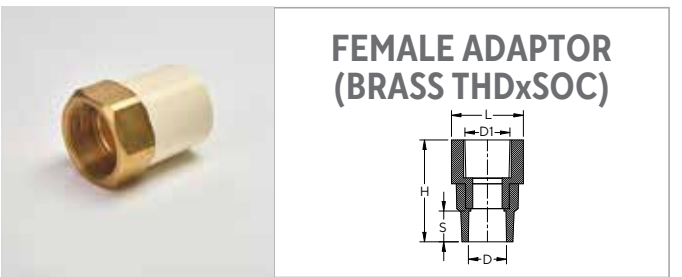
DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
							Std.	Mast.
½ x ½ x ½	M512110301	51.66	38	38	16.08	1/2"	50	200
¾ x ¾ x ½	M512110314	68.32	43	43	22.45	1/2"	25	100
¾ x ¾ x ¾	M512110302	61.9	47	47	22.45	3/4"	25	100
1 x 1 x ½	M512110315	78.86	50.5	50.5	28.83	1/2"	25	75
1 x 1 x ¾	M512110316	77.78	51	51	28.83	3/4"	25	75
1 x 1 x 1	M512110303	-	-	-	-	-	10	50
1¼ x 1¼ x 1¼	M512110304	94.6	66.9	66.9	35.2	1-1/4"	05	30
1¼ x 1¼ x ½	M512110317	94.7	64.8	64.8	35.2	1/2"	10	40



DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
							Std.	Mast.
¾ x ½	M512111514	52.6	30.1	18.5	22.45	1/2"	25	150
1 x ½	M512111515	60.3	37.6	24.5	28.83	1/2"	25	100
1 x ¾	M512111416	59.9	37.6	23.5	28.83	3/4"	25	125



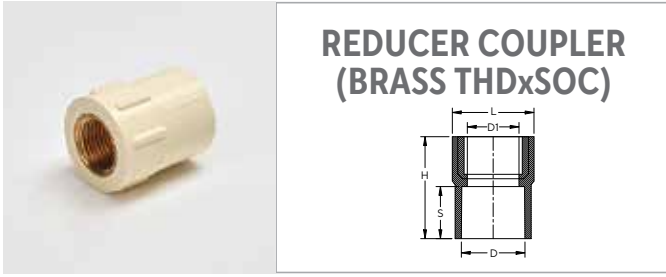
DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
							Std.	Mast.
¾ x ¾ x ½	M512114923	68	60.44	18.8	22.45	1/2"	10	100
1 x 1 x ½	M512115024	68	67.43	23.4	28.83	1/2"	-	75



DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
							Std.	Mast.
½	M512111701	43	30.4	13	16.08	1/2"	50	200
¾	M512111702	50.2	35.5	18	22.45	3/4"	25	100
1	M512111703	64.6	46	24.2	28.83	1"	10	50
1¼	M512111704	78.5	57	28.5	35.2	1-1/4"	5	25
1½	M512111705	84.4	63.2	33.5	41.66	1-1/2"	5	25
2	M512111706	93.5	77.7	43.7	54.38	2"	5	15



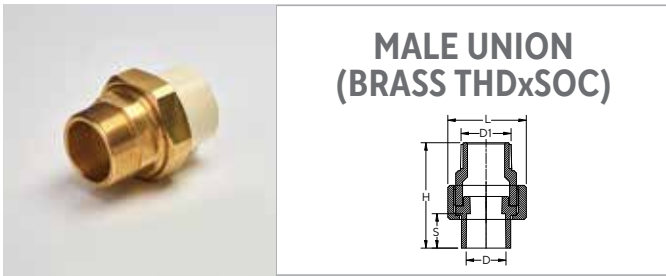
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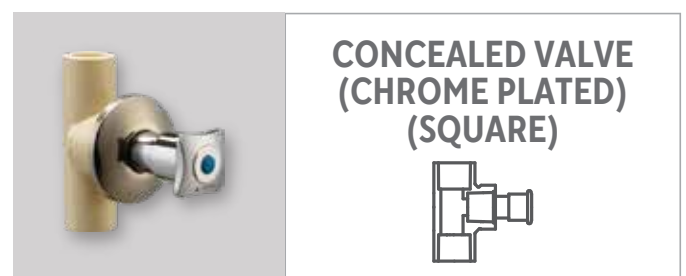
DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
							Std.	Mast.
¼ x ½	M512111214	39	33.8	18	22.45	1/2"	50	200
1 x ½	M512111215	44.4	36.96	23.8	28.83	1/2"	25	100
1 x ¾	M512111216	46.2	37	23.6	28.83	¾"	25	125



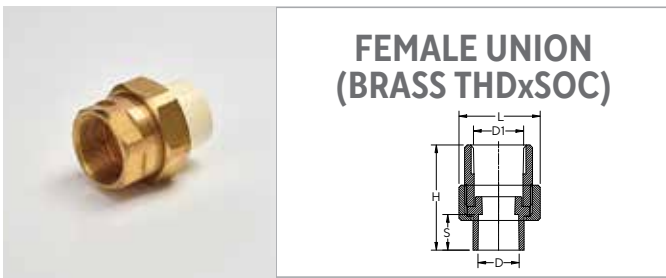
DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	Pkg.(Nos.)	
						Std.	Mast.
½	M512118501	117.5	93.6	19.5	16.08	01	20
¾	M512118502	125	115	25.5	22.45	02	16
1	M512118503	136	130	30.5	28.83	02	14



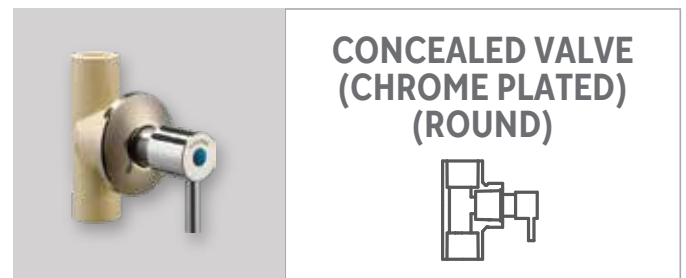
DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
							Std.	Mast.
½	M512119801	48.5	33	14	160.8	1/2"	25	200
¾	M512119802	63	43	18.1	22.45	¾"	10	100
1	M512119803	75	50.4	23.3	28.83	1"	10	60
1¼	M512119804	85	64	29.3	35.2	1-1/4"	5	35
1½	M512119805	91	72	34.1	41.66	1-1/2"	5	25
2	M512119806	107	88	43.5	54.38	2"	5	15



DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	Pkg.(Nos.)	
						Std.	Mast.
½	M5121110401#	117.5	93.6	19.5	16.08	-	01
¾	M5121110402#	125	115	25.5	22.45	-	01
1	M5121110403#	136	130	30.5	28.83	-	01



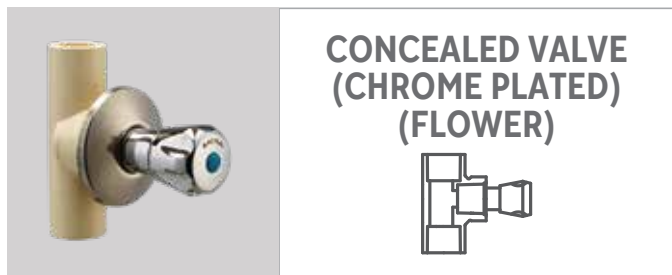
DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
							Std.	Mast.
½	M512119901	48.5	33	14	160.8	1/2"	25	200
¾	M512119902	63	43	18.1	22.45	¾"	10	110
1	M512119903	75	50.4	23.3	28.83	1"	10	70
1¼	M512119904	85	64	29.3	35.2	1-1/4"	5	35
1½	M512119905	91	72	34.1	41.66	1-1/2"	5	25
2	M512119906	107	88	43.5	54.38	2"	5	15



DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	Pkg.(Nos.)	
						Std.	Mast.
½	M5121110501#	117.5	93.6	19.5	16.08	-	01
¾	M5121110502	125	115	25.5	22.45	01	01
1	M5121110503#	136	130	30.5	28.83	-	01

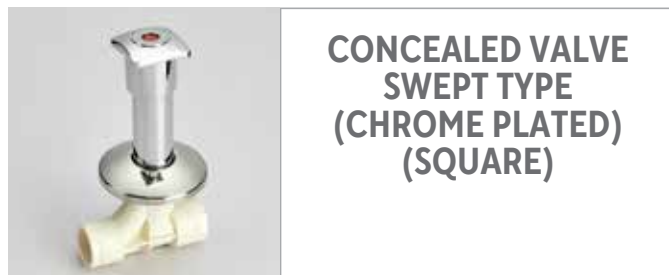
CPVC PRO PIPE & FITTINGS

SPARES FOR CONCEALED VALVE



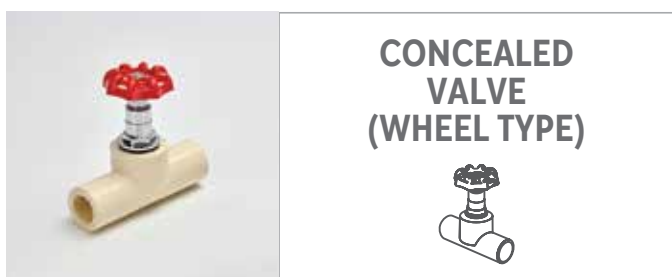
**CONCEALED VALVE
(CHROME PLATED)
(FLOWER)**

DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	Pkg.(Nos.)	
						Std.	Mast.
½	M5121110601#	117.5	93.6	19.5	16.08	-	01
¾	M5121110602#	125	115	25.5	22.45	-	01
1	M5121110603#	136	130	30.5	28.83	-	01



**CONCEALED VALVE
SWEPT TYPE
(CHROME PLATED)
(SQUARE)**

DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	Pkg.(Nos.)	
						Std.	Mast.
¾	M5121113302#	155	81.8	19	22.45	01	20
1	M5121113303#	155	88.6	23.7	28.83	01	20
¾	M5121113402#	124	81.8	19	22.45	01	20
1	M5121113403#	124	88.6	23.7	28.83	01	20



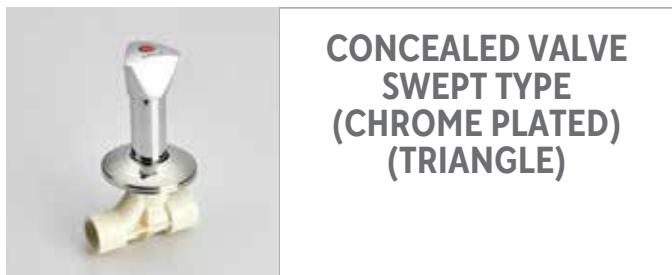
**CONCEALED
VALVE
(WHEEL TYPE)**

DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	Pkg.(Nos.)	
						Std.	Mast.
½	M512118601	103.5	93.6	19.5	16.08	01	20
¾	M512118602	108	115	25.5	22.45	02	16
1	M512118603#	-	-	-	-	-	01



**CONCEALED VALVE.
SWEPT TYPE
(CHROME PLATED)
(FLOWER)**

DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	Pkg.(Nos.)	
						Std.	Mast.
¾	M5121113502#	155	81.8	19	22.45	01	20
1	M5121113503#	155	88.6	23.7	28.83	01	20
¾	M5121113602#	124	81.8	19	22.45	01	20
1	M5121113603#	124	88.6	23.7	28.83	01	20



**CONCEALED VALVE
SWEPT TYPE
(CHROME PLATED)
(TRIANGLE)**

DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	Pkg.(Nos.)	
						Std.	Mast.
¾	M5121113102#	155	81.8	19	22.45	01	20
1	M5121113103#	155	88.6	23.7	28.83	01	20
¾	M5121113202#	124	81.8	19	22.45	01	20
1	M5121113203#	124	88.6	23.7	28.83	01	20



**CONCEALED VALVE
SWEPT TYPE
(CHROME PLATED)
(ROUND)**

DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	Pkg.(Nos.)	
						Std.	Mast.
¾	M5121113702#	155	81.8	19	22.45	01	20
1	M5121113703#	155	88.6	23.7	28.83	01	20
¾	M5121113802#	124	81.8	19	22.45	01	20
1	M5121113803#	124	88.6	23.7	28.83	01	20



WHEEL KNOB

DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	Pkg.(Nos.)	
						Std.	Mast.
¾	WH-VAL-A# Ø	-	-	-	-	-	01



**FANCY HANDLE
(KNOB) WITH
RED & BLUE
PLASTIC BUTTON
(TRIANGLE)**

Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
2.0	¾	RM04159009	-	01



**S.S. FLANGE
WITH RUBBER
GROMET**

Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
2.0	¾	RM04159004	-	01



**FANCY HANDLE
(KNOB) WITH
RED & BLUE
PLASTIC BUTTON
(SQUARE)**

Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
2.0	¾	RM04159006	-	01



BRASS PIPE (C.P)

Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
2.0 (Long)	¾	RM04159005#	-	01
2.0 (short)	¾	RM04159015#	-	01



**FANCY HANDLE
(KNOB) WITH
RED & BLUE
PLASTIC BUTTON
(ROUND)**

Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
2.0	¾	RM04159007	-	01



**SPINDLE VALVE
PART WITH
GASKET**

Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
2.0(Short)	¾	RM04159010	-	01
2.0(Long)	¾	RM04159011	-	01
2.5(Short)	1	RM04159012	-	01
2.5(Long)	1	RM04159013	-	01



**FANCY HANDLE
(KNOB) WITH
RED & BLUE
PLASTIC BUTTON
(FLOWER)**

Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
2.0	¾	RM04159008	-	01



**VALVE
SPINDLE WITH
'O' RING+ SHEET
METAL LOCK**

Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
2.0	¾	FA-VAL-E	-	01

CPVC PRO PIPE & FITTINGS

CTS - AS PER ASTM D2846



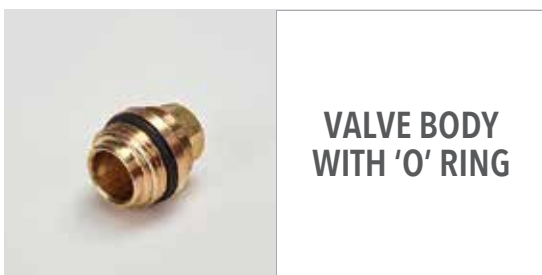
Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
2.0	¾	FA-VAL-F	-	01



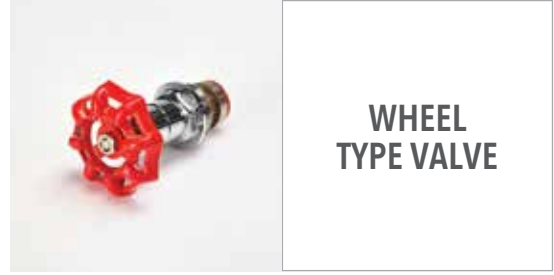
Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
1.5	½	RM04159001	-	01
2.0	¾	RM04159002	-	01
2.5	1	RM04159003	-	01



Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
1.5	½	RM04151012	-	01
2.0	¾	RM04151034	-	01
2.5	1	RM04151001	-	01



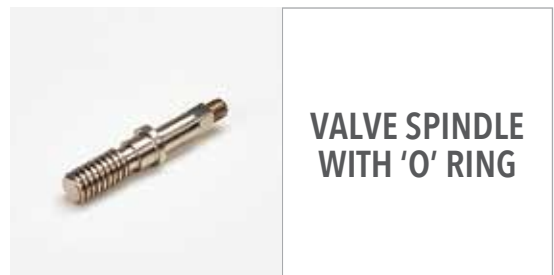
Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
2.0	¾	FA-VAL-D	-	01



Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
1.5	½	RM04152012	-	01
2.0	¾	RM04152034	-	01
2.5	1	RM04152001#	-	01



Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
2.0	¾	WH-VAL-B#	-	01



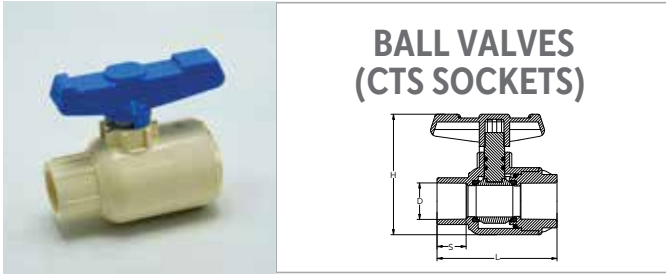
Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
2.0	¾	WH-VAL-C#	-	01



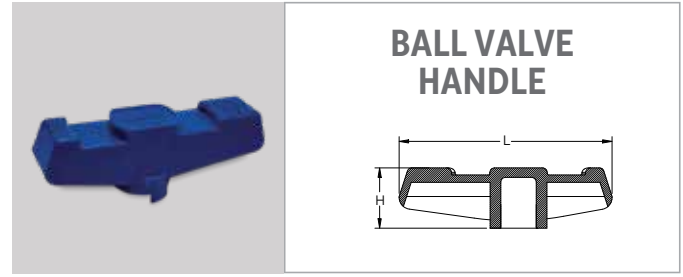
Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
2.0	¾	WH-VAL-D#	-	01



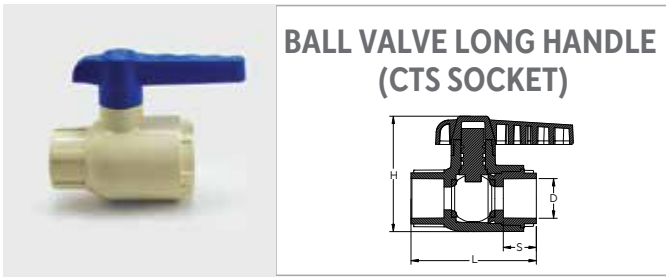
Only those products bearing the above marks are certified



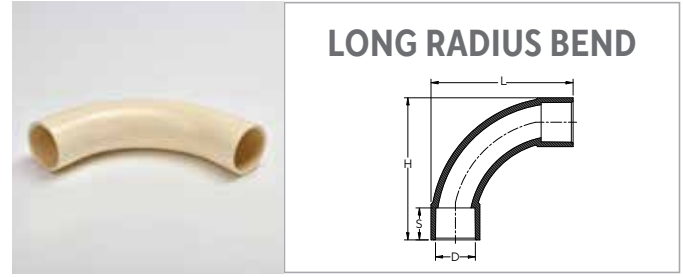
DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	Pkg.(Nos.)	
						Std.	Mast.
½	M512112701N	68.1	62.5	14.7	16.08	-	80
¾	M512112702N	81.5	79.7	18	22.45	-	100
1	M512112703N	96.2	91.5	24.9	28.83	-	60
1¼	M512112704N	111.71	106.4	29.5	35.2	-	40
1½	M512112705N	135.5	128.5	34.5	41.66	-	25
2	M512112706N	159.8	162.8	43.1	54.38	-	14



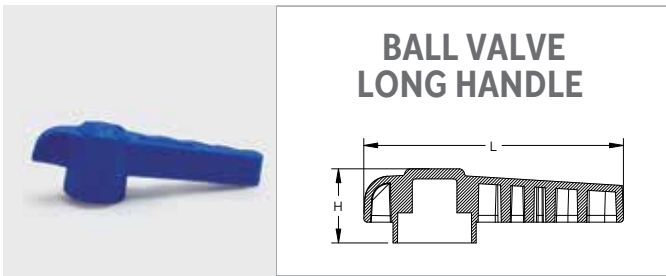
DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	Pkg.(Nos.)	
						Std.	Mast.
½	M512118001	22.6	62.3	-	-	-	01
¾	M512118002	27.5	78	-	-	-	01
1	M512118003	29.5	89	-	-	-	01
1¼	M512118004	36.3	103.7	-	-	-	01
1½	M512118005	44.6	119.6	-	-	-	01
2	M512118006	49.5	148	-	-	-	01



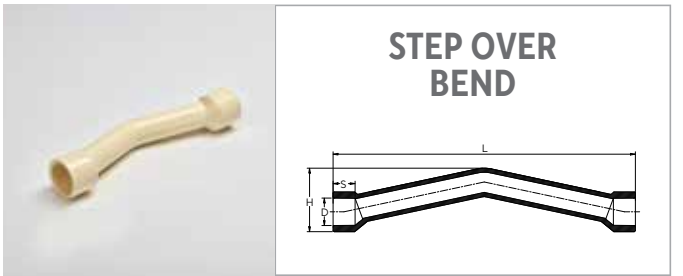
DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	Pkg.(Nos.)	
						Std.	Mast.
½	M512112701LH	64	69	18	16.08	-	80
¾	M512112702LH	77.5	79.7	23.3	22.45	-	100
1	M512112703LH	99	90.8	24	28.83	-	50
1¼	M512112704LH	112	99.8	28.2	35.2	-	40
1½	M512112705LH	124.8	119.7	28	41.66	-	30
2	M512112706LH	154.5	133.3	29.5	54.38	-	15



DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	Pkg.(Nos.)	
						Std.	Mast.
¾	M512110902	106	106	20.6	22.45	10	140
1	M512110903	123.8	123.8	23.4	28.83	10	80
1¼	M512110904	135	135	29.4	35.2	10	50
1½	M512110905	156.2	156.2	35.2	41.66	05	30
2	*F512110906	188	188	45	54.38	-	14



DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	Pkg.(Nos.)	
						Std.	Mast.
½	M512118001	21.5	74	-	-	-	01
¾	M512118002	27	83.8	-	-	-	01
1	M512118003	30.8	108.4	-	-	-	01
1¼	M512118004	35	115	-	-	-	01
1½	M512118005	37.5	129.4	-	-	-	01
2	M512118006	47	159.6	-	-	-	01



DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	Pkg.(Nos.)	
						Std.	Mast.
½	M512112801	39.8	150	20.8	16.08	10	150
¾	M512112802	50	189.5	18	22.45	10	200
1	M512112803	57.75	200	23	28.83	10	150
1¼	F512112804	75	360	27	35.2	-	30
1½	F512112805	80	380	32	41.66	-	20
2	F512112806	115	530	48	54.38	-	10

CPVC PRO PIPE & FITTINGS

COPPER TUBE SIZE - AS PER ASTM D2846



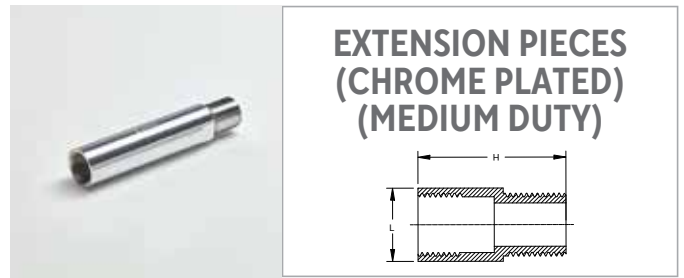
DN (cm)	Product Code	H (mm)	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
								Std.	Mast.
¾ x ½	M512510614	146.5	171.7	179	18.6	22.45	1/2"	-	06
1 x ½	M512510615	146.5	171.7	179	24	28.83	1/2"	-	06



DN (cm)	Product Code	H (mm)	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
								Std.	Mast.
¾ x ½	M512511014	146.5	171.7	179	18.6	22.45	1/2"	-	06
1 x ½	M512511015	146.5	171.7	179	24	28.83	1/2"	-	06



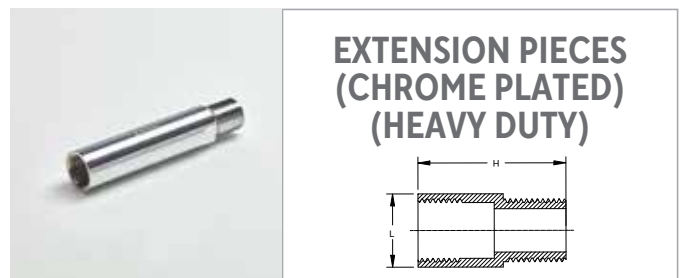
DN (cm)	Product Code	H (mm)	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
								Std.	Mast.
¾ x ½	M512510714	146.5	171.7	179	18.6	22.45	1/2"	-	06
1 x ½	M512510715	146.5	171.7	179	24	28.83	1/2"	-	06



DN (cm)	Product Code	H (mm)	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
								Std.	Mast.
1	T143-010M	27	-	26.7	-	-	-	-	96
1½	T143-015M	40	-	26.7	-	-	-	-	64
2	T143-020M	53	-	26.7	-	-	-	-	48
2½	T143-025M	67	-	26.7	-	-	-	-	40
3	T143-030M	77	-	26.7	-	-	-	-	32
4	T143-040M	99	-	25.5	-	-	-	-	24
5	T143-050M	122.8	-	25.5	-	-	-	-	20
6	T143-060M	147.5	-	25.5	-	-	-	-	16



DN (cm)	Product Code	H (mm)	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
								Std.	Mast.
¾ x ½	M512510814	146.5	171.7	179	18.6	22.45	1/2"	-	06
1 x ½	M512510815	146.5	171.7	179	24	28.83	1/2"	-	06



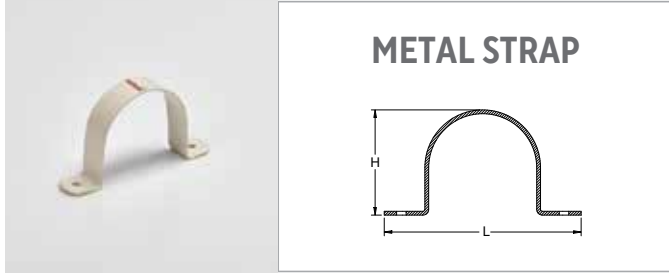
DN (cm)	Product Code	H (mm)	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
								Std.	Mast.
1	T143-010H	25.5	-	25.5	-	-	-	-	96
1½	T143-015H	38.4	-	25.5	-	-	-	-	64
2	T143-020H	49.5	-	25.5	-	-	-	-	48
2½	T143-025H	62.2	-	25.5	-	-	-	-	40
3	T143-030H	73.5	-	25.5	-	-	-	-	32
4	T143-040H	99	-	25.5	-	-	-	-	24
5	T143-050H	123.8	-	25.5	-	-	-	-	20
6	T143-060H	148	-	25.5	-	-	-	-	16



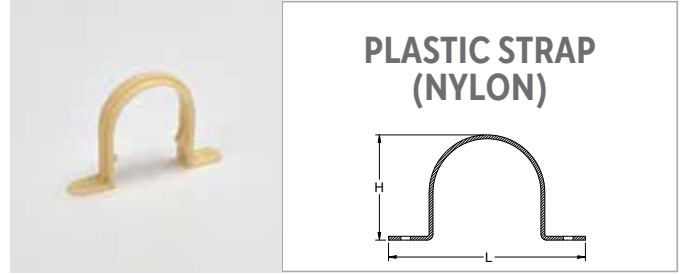
DN (cm)	Product Code	H (mm)	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
								Std.	Mast.
¾ x ½	M512510914	146.5	171.7	179	18.6	22.45	1/2"	-	06
1 x ½	M512510915	146.5	171.7	179	24	28.83	1/2"	-	06



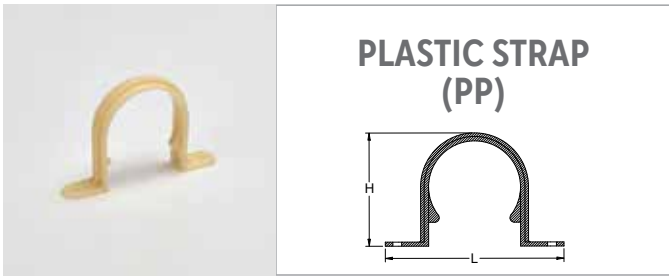
Only those products bearing the above marks are certified



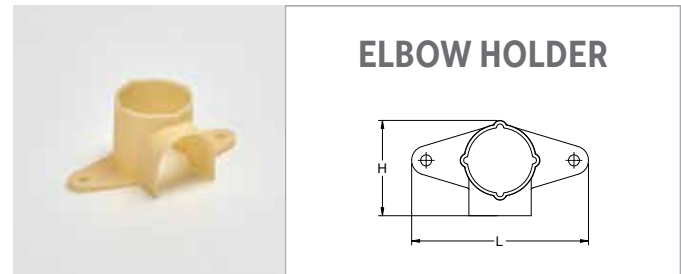
DN (cm)	Product Code	H (mm)	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
								Std.	Mast.
½	T9120M	17.8	-	59.5	-	-	-	-	900
¾	T9340M	23.5	-	66.5	-	-	-	-	600
1	T9100M	30	-	72	-	-	-	-	500
1¼	T9105M	36.5	-	78.5	-	-	-	-	400
1½	T9106M	43	-	86.5	-	-	-	-	300
2	T9200M	55.3	-	103.5	-	-	-	-	250



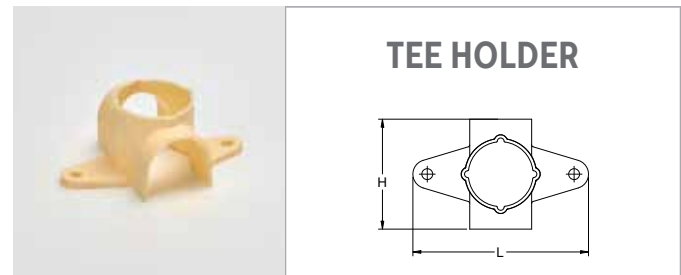
DN (cm)	Product Code	H (mm)	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
								Std.	Mast.
½	M214006101	45	-	22	-	-	-	-	1500
¾	M214006102	46	-	28	-	-	-	-	2400
1	M214006103	56	-	34.7	-	-	-	-	1600
1¼	M214006104	79.5	-	42	-	-	-	-	900
1½	M214006105	89	-	50.5	-	-	-	-	600
2	M214006106	101	-	64	-	-	-	-	400



DN (cm)	Product Code	H (mm)	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
								Std.	Mast.
½	M214006001	45	-	22	-	-	-	-	1500
¾	M214006002	46	-	28	-	-	-	-	2400
1	M214006003	56	-	34.7	-	-	-	-	1600
1¼	M214006004	79.5	-	42	-	-	-	-	900
1½	M214006005	89	-	50.5	-	-	-	-	600
2	M214006006	101	-	64	-	-	-	-	400



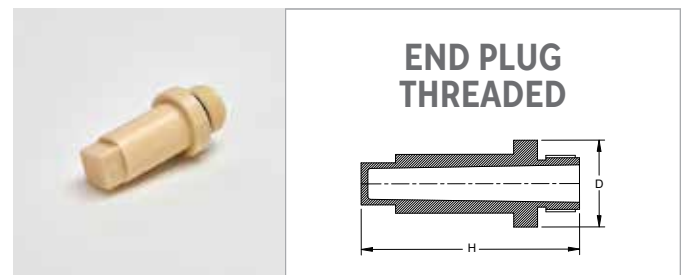
DN (cm)	Product Code	H (mm)	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
								Std.	Mast.
½ x ½	M214006701	59.5	-	78.1	-	-	-	-	500
¾ x ½	M214006714	47.5	-	88.5	-	-	-	-	400



DN (cm)	Product Code	H (mm)	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
								Std.	Mast.
½ x ½	M214006801	-	-	-	-	-	-	-	500
¾ x ½	M214006814	55.54	-	88.5	-	-	-	-	400



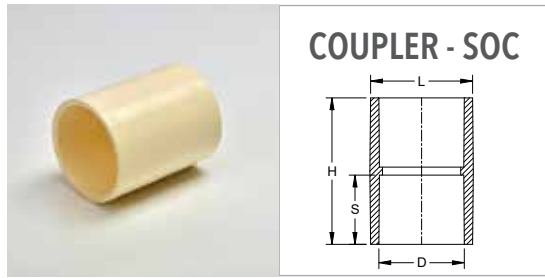
Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
1.5	½	T9120MSS	150	1500
2.0	¾	T9340MSS	180	1800
2.5	1	T9100MSS	150	1500
3.2	1¼	T9105MSS	100	1000
4.0	1½	T9106MSS	80	800
5.0	2	T9200MSS	50	500



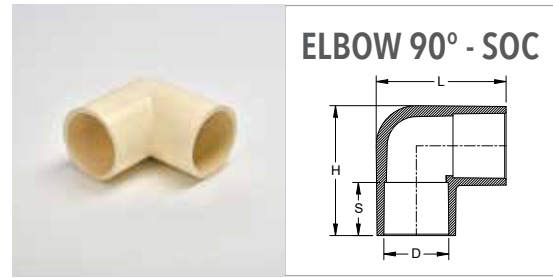
DN (cm)	Product Code	H (mm)	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
								Std.	Mast.
¾ x ½	M214002901	78	-	-	-	31	-	-	300
1 x ½	M214002902	80	-	-	-	36	-	-	200

CPVC PRO PIPE & FITTINGS

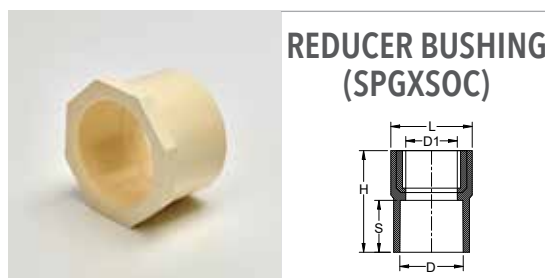
SCH - 40 FITTINGS AS PER ASTM F438



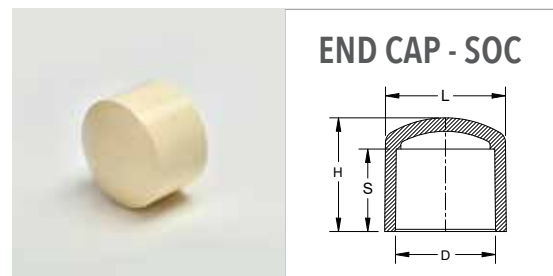
Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5	2½	M512401007	05	20
8.0	3	M512401008	05	15
10.0	4	M512401009	-	08



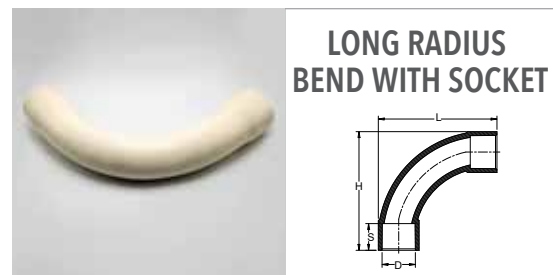
Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5	2½	M512400507	05	15
8.0	3	M512400508	-	10
10.0	4	M512400509	-	06



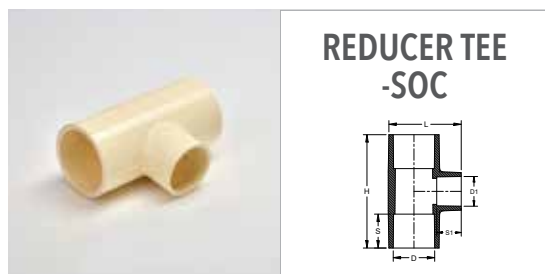
Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5 x 2.5	2½ x 1	A512401931	-	01
6.5 x 3.2	2½ x 1¼	M512401932	05	25
6.5 x 4.0	2½ x 1½	M512401933	05	25
6.5 x 5.0	2½ x 2	M512401934	05	25
8.0 x 2.5	3 x 1	A512401937	-	01
8.0 x 4.0	3 x 1½	M512401939	05	20
8.0 x 5.0	3 x 2	M512401940	05	20
8.0 x 6.5	3 x 2½	M512401941	05	20
10.0 x 5.0	4 x 2	M512401947	05	10
10.0 x 6.5	4 x 2½	M512401948	05	10
10.0 x 8.0	4 x 3	M512401949	05	10



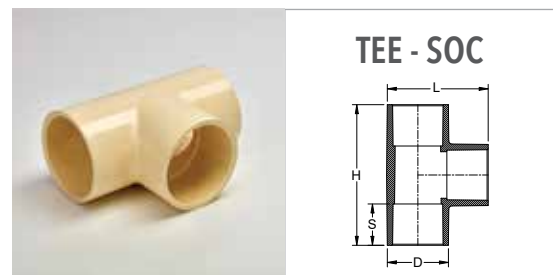
Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5	2½	M512404107	05	10
8.0	3	M512404108	05	10
10.0	4	M512404109	-	10



Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5	2½	°F512400907	-	06
8.0	3	°F512400908	-	05
10.0	4	°F512400909	-	04



Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
8.0x6.5	3 X 2½	M512400241	10	10
10.0x6.5	4 X 2½	M512400248	06	06
10.0x8.0	4 X 3	M512400249	06	06

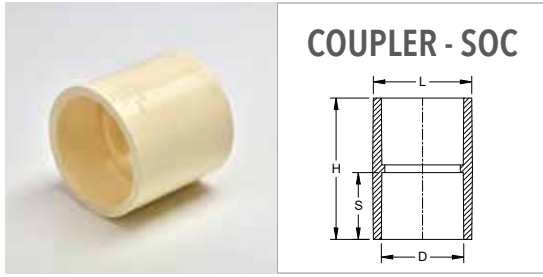


Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5	2½	M512400107	-	12
8.0	3	M512400108	-	08
10.0	4	M512400109	-	04

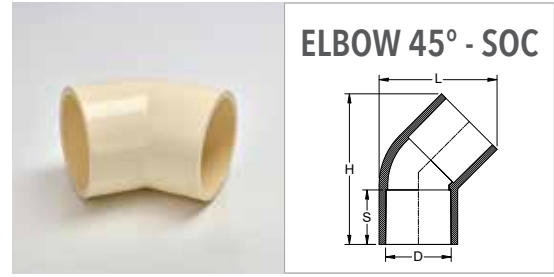
Note: Fabricated reducer fittings are not eligible for return to the manufacturer. SOC-SOCKET, SPG - SPIGOT. All the items where product code starts with "A" are assembled items.

CPVC PRO PIPE & FITTINGS

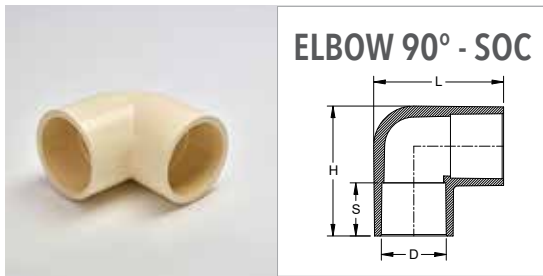
SCH 80 FITTINGS AS PER ASTM F439



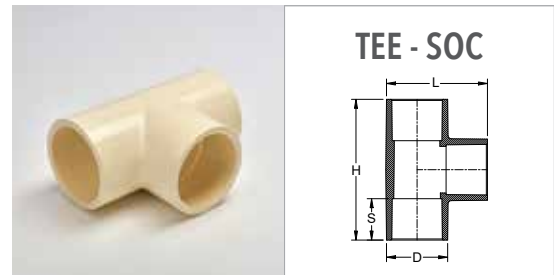
Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5	2½	M512801007	05	20
8.0	3	M512801008	05	15
10.0	4	M512801009	-	12
15.0	6	M512801010	-	02
20.0	8	M512801011	-	01
25.0	10	M512801012	-	01
30.0	12	M512801013#	-	01



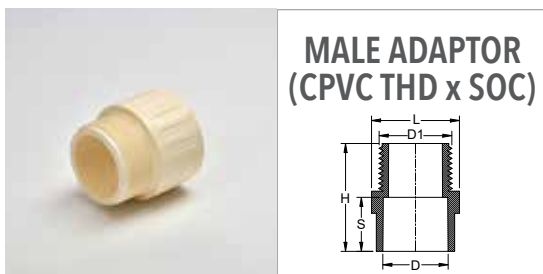
Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5	2½	M512802307	05	20
8.0	3	M512802308	-	12
10.0	4	M512802309	-	06
15.0	6	M512802310	-	02
20.0	8	M512802311	-	01



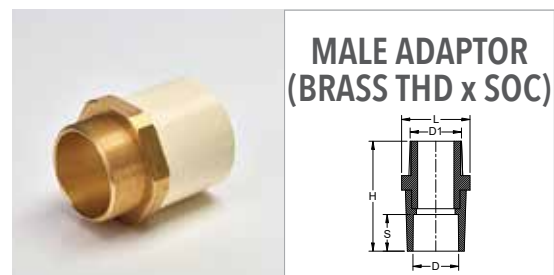
Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5	2½	M512800507	05	15
8.0	3	M512800508	-	10
10.0	4	M512800509	-	05
15.0	6	M512800510	-	02
20.0	8	M512800511	-	01



Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5	2½	M512800107	05	12
8.0	3	M512800108	-	07
10.0	4	M512800109	-	04
15.0	6	M512800110	-	02
20.0	8	M512800111#	-	01



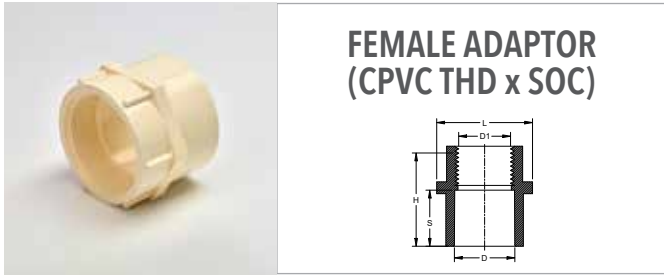
Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5	2½	M512801307	05	30
8.0	3	M512801308	05	20
10.0	4	M512801309	-	15



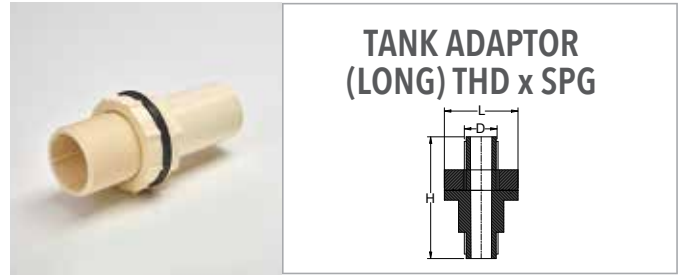
Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5	2½	M512801407	-	09
8.0	3	M512801408	-	08
10.0	4	M512801409	-	04



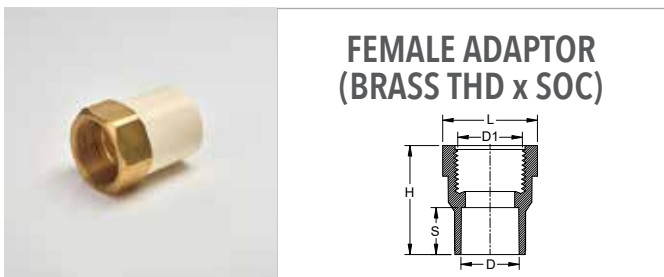
Only those products bearing the above marks are certified



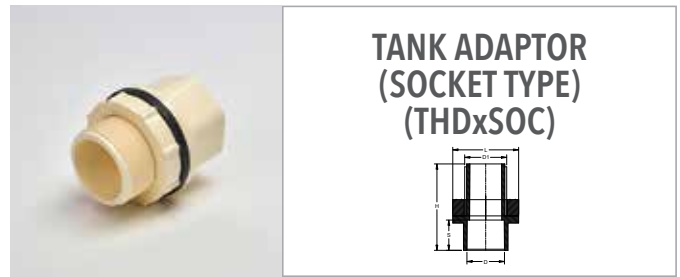
Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5	2½	M512801607	05	30
8.0	3	M512801608	05	20
10.0	4	M512801609	-	12



Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5	2½	*F512806507	-	15
8.0	3	*F512806508	-	09



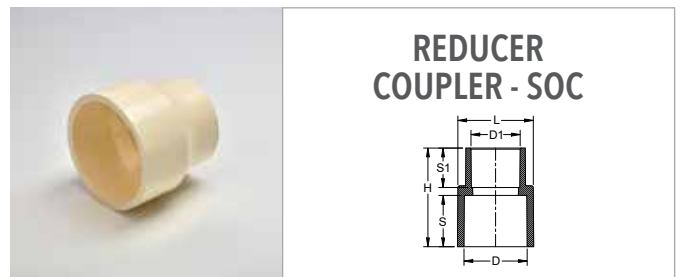
Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5	2½	M512801707	-	09
8.0	3	M512801708	-	07
10.0	4	M512801709	-	06



DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
							Std.	Mast.
¾	M5128010202	64.5	54.5	25.6	26.87	¾"	25	75
1	M5128010203	72	50.7	28.8	33.66	1"	20	60
1¼	M5128010204	79.35	64	32.5	42.42	1-¼"	10	70
1½	M5128010205	87.7	70.52	35.7	48.56	1-½"	10	60
2	M5128010206	92	82.4	39	60.63	2"	05	35



DN (cm)	Product Code	H (mm)	L (mm)	S (mm)	D (mm)	D1 (mm)	Pkg.(Nos.)	
							Std.	Mast.
½	M052806501	90	45	40	21.34	1/2"	25	200
¾	M052806502	105	50	50	26.67	¾"	20	140
1	M052806503	127	55	60	33.4	1"	20	80
1¼	M052806504	167	65	75	42.16	1-¼"	10	40
1½	M052806505	170	70	75	48.26	1-½"	05	30
2	M052806506	175	82	80	60.32	2"	05	20

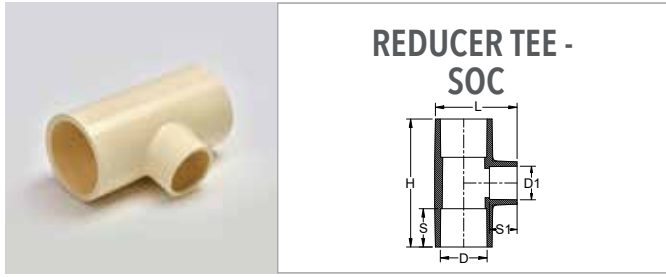


Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5 x 3.2	2½ x 1¼	M512801132	08	48
6.5 x 4.0	2½ x 1½	M512801133	05	40
6.5 x 5.0	2½ x 2	M512801134	05	40
8.0 x 3.2	3 x 1¼	M512801138	-	30
8.0 x 4.0	3 x 1½	M512801139	-	27
8.0 x 5.0	3 x 2	M512801140	05	25
8.0 x 6.5	3 x 2½	M512801141	05	25
10.0 x 4.0	4 x 1½	M512801146	-	16
10.0 x 5.0	4 x 2	M512801147	-	16
10.0 x 6.5	4 x 2½	M512801148	-	15
10.0 x 8.0	4 x 3	M512801149	-	15
15.0 x 5.0	6 x 2	M512801155	-	04
15.0 x 6.5	6 x 2½	M512801156	-	04
15.0 x 8.0	6 x 3	M512801157	-	04
15.0 x 10.0	6 x 4	M512801158	-	04
20.0 x 15.0	8 x 6	M512801168	-	02

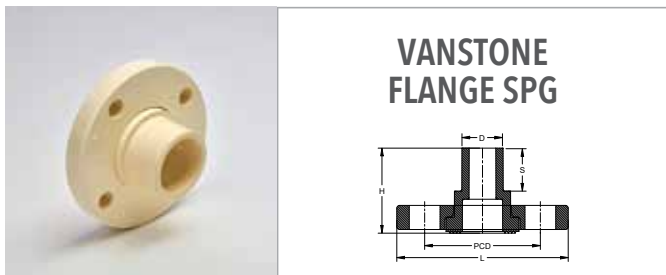
Sizes above 6" will be in Grey colour
 * Reducer fittings are professionally assembled using Astral fittings and bushings. Quantity as per order.
 Note: Fabricated reducer fittings are not eligible for return to the manufacturer.
 SOC - SOCKET
 All the items where product code starts with "A" are assembled items.
 All the items where product code starts with "F" are fabricated items.

CPVC PRO PIPE & FITTINGS

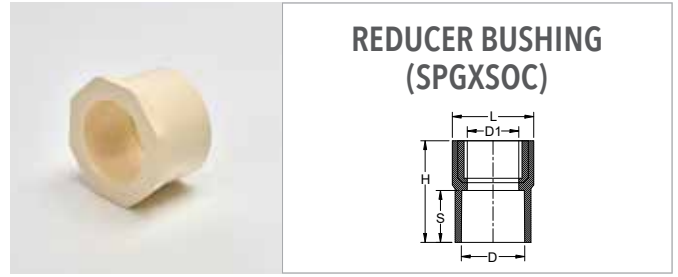
SCH - 80 FITTINGS AS PER ASTM F439



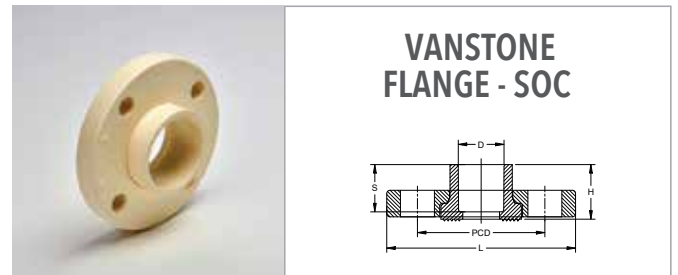
Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5x2.5	2½ x 1	M512800231	-	15
6.5x3.2	2½ x 1¼	M512800232	-	15
6.5x4.0	2½ x 1½	M512800233	-	15
6.5x5.0	2½ x 2	M512800234	-	12
8.0x2.5	3 x 1	M512800237	-	12
8.0x3.2	3 x 1¼	M512800238	-	12
8.0x4.0	3 x 1½	M512800239	-	10
8.0x5.0	3 x 2	M512800240	-	09
8.0x6.5	3 x 2½	M512800241	-	09
10.0x2.5	4 X 1	M512800244	-	05
10.0x3.2	4 X 1¼	M512800245	-	05
10.0x4.0	4 X 1½	M512800246	-	05
10.0x5.0	4 X 2	M512800247	-	05
10.0x6.5	4 X 2½	M512800248	-	05
10.0x8.0	4 X 3	M512800249	-	05
15.0x5.0	6 x 2	M512800255	-	02
15.0x6.5	6 x 2½	M512800256#	-	02
15.0x8.0	6 x 3	M512800257	-	02
15.0x10.0	6 x 4	M512800258	-	02
20.0x10.0	8 x 4	M512800267*	-	01
20.0x15.0	8 x 6	M512800268*	-	01



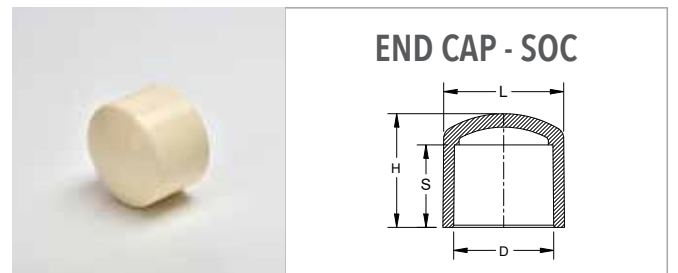
Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5	2½	M512803307	-	12
8.0	3	M512803308	-	10
10.0	4	M512803309	-	06



Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5 x 3.2	2½ x 1¼	M512801932	05	50
6.5 x 4.0	2½ x 1½	M512801933	05	50
6.5 x 5.0	2½ x 2	M512801934	05	50
8.0x3.2	3 x 1¼	M512801938	-	-
8.0 x 4.0	3 x 1½	M512801939	05	35
8.0 x 5.0	3 x 2	M512801940	05	35
8.0 x 6.5	3 x 2½	M512801941	05	35
10.0 x 5.0	4 x 2	M512801947	05	20
10.0 x 6.5	4 x 2½	M512801948	05	10
10.0 x 8.0	4 x 3	M512801949	05	20
15.0 x 8.0	6 x 3	M512801957	-	06
15.0 x 10.0	6 x 4	M512801958	-	06
20.0 x 10.0	8 x 4	M512801967	-	03
20.0 x 15.0	8 x 6	M512801968	-	03



Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5	2½	M512803407	-	15
8.0	3	M512803408	-	12
10.0	4	M512803409	-	08
15.0	6	M512803410	-	03
20.0	8	M512803411	-	01

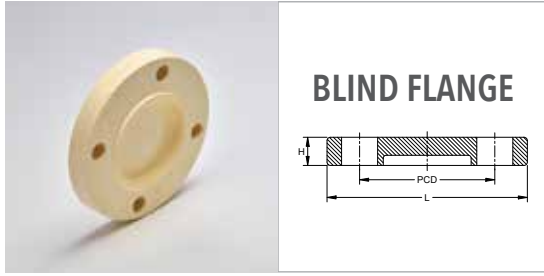


Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5	2½	M512804107	-	55
8.0	3	M512804108	-	39
10.0	4	M512804109	-	18
15.0	6	M512804110	-	06

All the items where product code starts with "A" are assembled items. SOC - SOCKET, SPG - SPIGOT # Shortly introducing



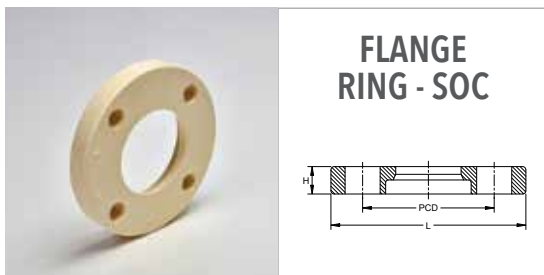
Only those products bearing the above marks are certified



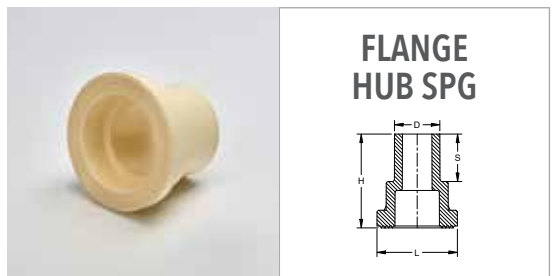
Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
8.0	3	M512803108	-	20
10.0	4	M512803109	-	12



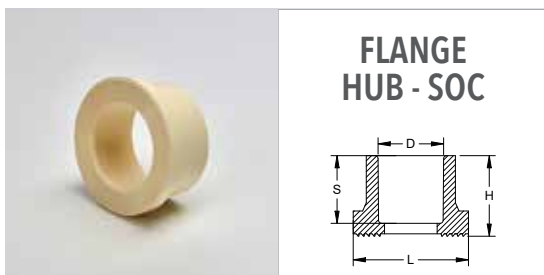
Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
8.0	3	M512803208	-	12
10.0	4	M512803209	-	08



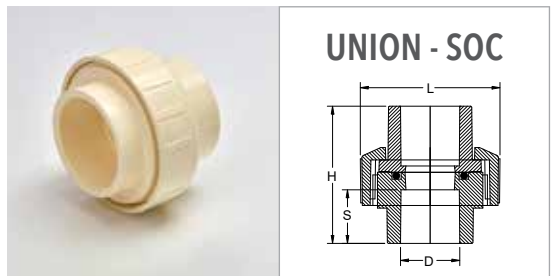
Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5	2½	M512804207	-	01
8.0	3	M512804208	-	01
10.0	4	M512804209	-	01
15.0	6	M512804210	-	01
20.0	8	M512804211	-	01



Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5	2½	M512803707	-	01
8.0	3	M512803708	-	01
10.0	4	M512803709	-	01



Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5	2½	M512803607	-	01
8.0	3	M512803608	-	01
10.0	4	M512803609	-	01
15.0	6	M512803610	-	01
20.0	8	M512803611	-	01



Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
6.5	2½	M512802607	-	15
8.0	3	M512802608	-	10
10.0	4	M512802609	-	04



Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
2.0	¾	M5128012702	100	600
2.5	1	M5128012703	50	350

CPVC PRO PIPE & FITTINGS

VALVES - TRADING



**TRUE UNION
IND BALL VALVE
SOC (EPDM)**

Size (cm)	Size (inch)	Product Code	Pkg.(Nos.) Std. Mast.	
6.5	2½	1822-025C [⊙]	-	01
8.0	3	1822-030C [⊙]	-	01
10.0	4	1822-040C [⊙]	-	01
15.0	6	1822-060C [⊙]	-	01
20.0	8	1822-080C [⊙]	-	01



**WAFER
BUTTERFLY
VALVE (VITON)
W/HANDLE**

Size (cm)	Size (inch)	Product Code	Pkg.(Nos.) Std. Mast.	
6.5	2½	753311-025C [⊙]	-	01
8.0	3	753311-030C [⊙]	-	01
10.0	4	753311-040C [⊙]	-	01
15.0	6	753311-060C [⊙]	-	01
20.0	8	753311-080C [⊙]	-	01



**TRUE UNION
IND BALL CHECK
SOC (EPDM)**

Size (cm)	Size (inch)	Product Code	Pkg.(Nos.) Std. Mast.	
6.5	2½	4522-025C [⊙]	-	01
8.0	3	4522-030C [⊙]	-	01
10.0	4	4522-040C [⊙]	-	01
15.0	6	4522-060C [⊙]	-	01
20.0	8	4522-080C [⊙]	-	01



**BALL VALVE
SPEARS**

Size (cm)	Size (inch)	Product Code	Pkg.(Nos.) Std. Mast.	
1.5	½	1922 - 005	-	01
2.0	¾	1922 - 007	-	01
2.5	1	1922 - 010	-	01
3.2	1¼	1922 - 012	-	01
4.0	1½	1922 - 015	-	01
5.0	2	1922 - 020	-	01



**STD. BUTTERFLY
VALVE (EPDM)
W/HANDLE**

Size (cm)	Size (inch)	Product Code	Pkg.(Nos.) Std. Mast.	
6.5	2½	722311-025C [⊙]	-	01
8.0	3	722311-030C [⊙]	-	01
10.0	4	722311-040C [⊙]	-	01
15.0	6	722311-060C [⊙]	-	01
20.0	8	722311-080C [⊙]	-	01



NRV - SOC

Size (cm)	Size (inch)	Product Code	Pkg.(Nos.) Std. Mast.	
2.0	¾	M5128013902	01	60
2.5	1	M5128013903	01	40

CPVC PRO PIPE & FITTINGS SOLVENT CEMENTS & PRIMER



Only those products bearing the above marks are certified



**IPS WELD-ON
500 CTS
ADHESIVE TUBE
(YELLOW)**

Qty. (ml)	Product Code	Pkg.(Nos.)	
		Std.	Mast.
22	TTINS-2217	-	48
44	TTINS-44	-	24



**IPS WELD-ON
500 CTS ADHESIVE
SOLUTION
(YELLOW)
SUITABLE FOR (1/2"-2")
SDR 11 SDR 13.5**

Qty. (ml)	Product Code	Pkg.(Nos.)	
		Std.	Mast.
50	M001001015	-	48
118	M001001020	-	24
237	M001001025	-	24
473	M001001030	-	12
946	M001001035	-	12

For sizes 65 mm and above use cpvc 724 adhesive solution



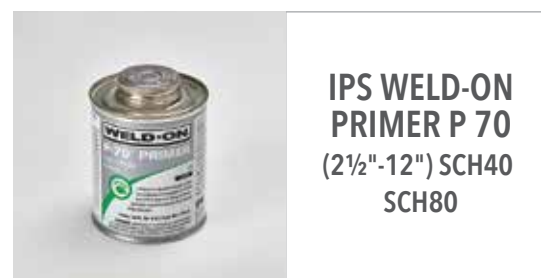
**PIPEFIX
CPVC 307**

Qty. (ml)	Product Code	Pkg.(Nos.)	
		Std.	Mast.
50	M003605005	-	48
118	M003605010	-	24
237	M003605015	-	24
473	M003605020	-	12
946	M003605025	-	12



RESCUE TAPE

Size (ft.)	Product Code	Pkg.(Nos.)	
		Std.	Mast.
5	M005601010	-	120
5	M005601015	-	120
5	M005601005	-	120
10	M005601025	-	120
10	M005601030	-	120
10	M005601020	-	120
15	M005601040	-	120
15	M005601045	-	120
15	M005601035	-	120



**IPS WELD-ON
PRIMER P 70
(2½"-12") SCH40
SCH80**

Qty. (ml)	Product Code	Pkg.(Nos.)	
		Std.	Mast.
473	M008401005	-	12
946	M008401010	-	12

N.B. Must use primer for 65 mm (2½") & above



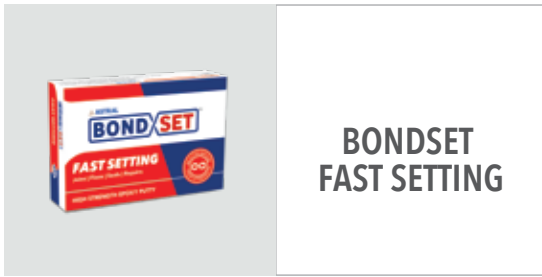
**CPVC 724
(2½"-12") SCH40
SCH80**

Qty. (ml)	Product Code	Pkg.(Nos.)	
		Std.	Mast.
473	M008301005	-	12
946	M008301010	-	12

N.B. For sizes 65 mm (2½") and above

CPVC PRO PIPE & FITTINGS

ANCILLARY PRODUCTS



**BONDSET
FAST SETTING**

Qty. (gm)	Product Code	Pkg.(Nos.)	
		Std.	Mast.
50	M000702051	-	01
100	M000702050	-	01



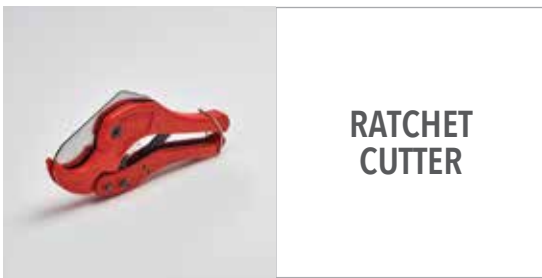
RESI-SHIELD

Size	Product Code	Pkg.(Nos.)	
		Std.	Mast.
100ML	RESI-SHIELD-100ML	-	100
200ML	RESI-SHIELD-200ML	-	50
500ML	RESI-SHIELD-500ML	-	25
1 L	RESI-SHIELD-1L	-	12
5 L	RESI-SHIELD-5L	-	03
20 L	RESI-SHIELD-20L	-	01



**PTFE TAPE
(12 MM WIDTH)**

Size (m)	Product Code	Pkg.(Nos.)	
		Std.	Mast.
4	M003302004	-	01
8	M003302007	-	01
8	M003302017	-	01



**RATCHET
CUTTER**

Size (cm)	Size (inch)	Product Code	Pkg.(Nos.)	
			Std.	Mast.
1.5 - 3.2	½ - 1¼	TTOOLS-1Ø	-	01

INSTALLATION PROCEDURE



1. CUTTING

In order to make a proper and neat joint, measure the pipe length accurately and make a small mark. Ensure that the pipe and fittings are size compatible. You can easily cut with a wheel type plastic pipe cutter or hacksaw blade. Cutting tubing as squarely as possible provides optimal bonding area within a joint.



2. DEBURRING/ BEVELING

Burrs and filings can prevent proper contact between tube and fitting during assembly and should be removed from the outside and inside of the pipe. Debarking tool, pocket knife or file are suitable for this. A slight bevel on the end of the tubing will ease entry of the tubing into the fitting socket.



3. FITTING PREPARATION

Using a clean, dry rag, wipe dirt and moisture from the fitting sockets and tubing end. The tubing should make contact with the socket wall 1/3 to 2/3 of the way into the fitting socket.

4. SOLVENT CEMENT APPLICATION

Use only CPVC cement or an all - purpose cement conforming to ASTM F-493 or joint failure may result. When making a joint, apply a heavy, even coat of cement to the pipe end. Use the same applicator without additional cement to apply a thin coat inside the fitting socket. Too much cement can cause clogged water ways.



5. ASSEMBLY

Immediately insert the tubing into the fitting socket, rotate the tube $\frac{1}{4}$ to $\frac{1}{2}$ turn while inserting. This motion ensures an even distribution of cement within the joint. Properly align the fittings. Hold the assembly for approximately 10 seconds, allowing the joint to set-up.



6. SET AND CURE

Solvent cement set and cure times are a function of pipe size, temperature and relative humidity. Curing time is shorter for drier environments, smaller sizes and higher temperatures. It requires 10 to 20 minutes for perfect joint.

Note: For sizes above 65 mm (2½") use IPS 70 primer before applying solvent cement. The purpose of a primer is to penetrate and soften the surfaces so they can stick together. The proper use of a primer ensures that the surfaces are prepared for fusion in a wide variety of weather conditions.



HOW TO USE SOLVENT CEMENT PRIMER & CLEANER

JOINT CURING

Recommended initial set times

Temperature Range	Pipe Size ½" to 1 ¼" (15 mm to 32 mm)	Pipe Size 1½" to 3" (40 mm to 80 mm)	Pipe Size 4" to 8" (100 mm to 200 mm)	Pipe Size 10" to 12" (250 mm to 300 mm)
15.5°C - 37.7°C	15 min.	30 min.	1 hrs.	2 hrs.
4.4°C - 15.5°C	1 hrs.	2 hrs.	4 hrs.	8 hrs.

Recommended initial cure times

Temperature Range	Pipe Size ½" to 1 ¼" (15 mm to 32 mm)	Pipe Size 1½" to 3" (40 mm to 80 mm)	Pipe Size 4" to 8" (100 mm to 200 mm)	Pipe Size 10" to 12" (250 mm to 300 mm)
15.5°C - 37.7°C	6 hrs.	12 hrs.	24 hrs.	48 hrs.
4.4°C - 15.5°C	12 hrs.	24 hrs.	48 hrs.	96 hrs.

CHOOSING SOLVENT CEMENTS & PRIMERS

Solvent cements for Astral CPVC PRO systems must conform to the requirements of ASTM F-493 or equivalent and should carry this identification on the can / tube label. A primer or cleaner must be used. Primers for PVC pipe can be used for CPVC. The National Sanitation Foundation (NSF) mark or other potable water approval should also be located on the container.

Certain code bodies require orange CPVC solvent cement and purple primer to facilitate identification by plumbing inspectors. However, unpigmented (clear) CPVC solvent cement and primer are available and accepted by various jurisdictions. If you decide to use clear products, we strongly recommend contracting the local plumbing inspector prior to beginning a job to determine whether these clear cements and primers are acceptable or not.

CPVC SOLVENT CEMENT'S SHELF LIFE

CPVC solvent cement are formulated to have a Shelf life of two years. Cans are usually marked with manufacturing dates. Good CPVC solvent cement should have the consistency of syrup or honey with no undissolved materials. Aged cement will often change colour or begin to thicken and become gelatinous or jelly-like. When this occurs, the cement must be thrown away.

SOLVENT CEMENT FREEZING

Use the same precautions to protect CPVC solvent cement from freezing as you would with PVC cement. Once cement gels, it can not be recovered and should be discarded.

BEFORE BEGINNING

1. Verify the cement is the same as the pipes and fittings being used.
2. Check the temperature where the cementing will take place.
 - Cement take longer time to set up in cold weather. Be sure to allow extra time for curing. Do not try to speed up the cure by artificial means this could cause porosity and blisters in the cement film.
 - Solvents evaporate faster in warm weather. Work quickly to avoid the cement setting up before the joint is assembled. Keep the cement as cool as possible. Try to stay out of direct sunlight.
3. Keep the lid on cements, cleaner, and primers when not in use. Evaporation of the solvent will effect the cement.
4. Stir or shake cement before using.
5. Use 20 mm (¾") dauber on small diameter pipes, 40 mm (1½") dauber, upto 80 mm (3") pipe, and a natural bristle brush, swab, or roller having size of ½ the pipe diameter on pipes from 100 mm (4") and up.
6. Do not mix cleaner or primer with cement.
7. Do not use thickened or lumpy cement. It should be like the consistency of syrup or honey.
8. Do not handle joints immediately after assembly.
9. Do not allow daubers to dry out.
10. Maximum temperature allowable for CPVC pipe is 180°F.
11. All coloured cements, primers, and cleaners will have a permanent stain. There is no known cleaning agent.
12. Use according to the step outline in ASTM D-2846, joining of pipe and fittings.



PRESSURING SOLVENT ADHESIVE JOINTS

In order to develop full strength of Solvent Adhesives Joints, adequate care should be taken. Before the joints get exposed to pressuring, many factors will impact the required fixing time.

- A. Onsite temperature and humidity
- B. Pipe diameter (larger diameter joints require more time to cure)
- C. Internal operating pressure
- D. Internal operating temperature

In general, the fixing time will allow cold-water lines to be pressurized to the cited levels shown.

As per the standard practices, before operating the hot-water lines additional 50% fixing time required than the cold-water lines. Professionals doing repair or maintenance work should give adequate fixing time to the hot-water lines before pressurizing the system.

Hot Weather Solvent Adhesive Application Above 86°F (30°C)

- Store solvent adhesive, pipes as well as fittings in a dry, cool and shaded area
- Need to make sure that the surface is dry prior applying solvent adhesive
- Make sure surface is dry prior to application of solvent adhesive
- Need to make sure both the surfaces to be joined by solvent are properly coated with the solvent adhesives
- Stir or shake the solvent adhesive properly before use
- System anchoring and final connections should be made during the cooler hours of the day to account for expansion and contraction.

System Acceptance (Hydrostatic Pressure) Test

Once an installation is completed and fixing time is given as per these recommendations. The system should be hydrostatically pressure tested at design pressure x 1.5 times for one hour. When pressure testing, the system should be filled with water and all air removed from the farthest and highest point in the run. If a leak is found, the joint must be cut out and discarded and a new section should be installed using couplings.

Danger: Pressure testing with compressed air is dangerous and can result in injury or death. Do not use air to test CPVC Pro pipe, fittings and accessories.

TESTING OF INSTALLATIONS

1. Prior to a test, a visual inspection of the system shall be conducted to ensure that the recommended installation procedure has been followed and the pipeline, appliances, valves, and fittings have been installed correctly. Upon completion of installation, pipework, fittings, and appliances shall be hydraulically tested and inspected. Pressure tests should not be conducted on solvent-welded pipes until at least 24 hours after the last solvent weld has been completed.
2. During the test, all control valves should be left open and all open ends should be temporarily closed with water-tight fittings. Testing pressure shouldn't be less than one and a half times the expected operating pressure of the pipe. However, it is important to ensure the pressure does not exceed the working pressure of the lowest rated component of the system.
3. Apply pressure either by hand pump or power-driven pump. To ensure that test pressures are not exceeded, pressure gauges must be properly positioned and carefully observed. Slowly and carefully fill the system with water to avoid surge pressure of water hammer. The vents on all high points should be open during filling so that air can be expelled from the system.
4. As soon as the system is fully charged with water and air displaced from the line, air vents need to be closed, and the line should be inspected for seepage at joints and firmness under load. A pressure of one hour may then be applied when the 1.5 x Expected Operating Water Pressure OR Pressure Rating of the Lowest Pressure Rated Part (e.g. valve or flange) is reached. Check each joint for leaks or water seepage again after an hour.

USE OF CPVC PIPES & FITTINGS IN SOLAR APPLICATION

Since the outlet of water heater remains excessive hot due to elevated temperature from the thermal radiation steam, CPVC pipes or fittings should not be connected directly to the outlet as the excessive heat exposure can lead to distortion and deformation of the product.

Need to follow below mentioned guidelines for while using Astral CPVC Pro pipes and fittings in Solar application

DO'S

- Connect GI pipe of 1m length with solar water heater outlet, then use CPVC pipes and fittings
- Use expansion loop for exposed pipes on every 9-12 feet pipe run
- Always use proper support on specified distance to damp exposed pipes

DON'TS

- Never connect Astral CPVC Pro pipes or fittings directly with solar water heater outlet
- Never use CPVC pipes without expansion loop or offset
- Don't clamp pipes near loop or offset

IMPORTANT NOTES

NUMBER OF JOINTS PER LITER OF CEMENT BY PIPE SIZE



Dia of Pipe		Appx. Nos of joints*
(mm)	(in.)	
15	½	1200
20	¾	750
25	1	500
32	1¼	450
40	1½	325
50	2	225
65	2½	50
75	3	40
100	4	30
150	6	10
200	8	5
250	10	2-4
300	12	1-2

* Approximate numbers of joints which can be made per ltr. of solvent cement

* For primer, number of joints are approximate double than solvent cement

SAFE HANDLING OF SOLVENT CEMENT

When using solvent cements, primers and cleaners there are some basic safety measures.

ALL USERS SHOULD KEEP IN MIND.

- Avoid prolonged breathing of solvent vapors. When pipes and fittings are being joined in enclosed area, the use of ventilating devices are advised.
- Keep cements, primers and cleaners away from all the sources of ignition, heat, sparks and open flame.
- Keep containers of cements, primers and cleaners tightly closed except when the product is being used.
- Dispose of all rags used with solvents in a proper outdoor waste receptacle.
- Avoid eye & skin contact. In case of eye contact, flush with plenty of water for 15 minutes & call a physician.

THREAD SEALANTS

Threaded CPVC fittings with tapered pipe threads (e.g. male thread adapters) must be used with a suitable thread sealant to insure leak-proof joints. Over the years, PTFE (Teflon® or equivalent) tape has been the preferred thread sealant, it is still the most widely accepted and approved thread sealant. Some paste sealant can affect CPVC fittings; therefore only sealants recommended for use with CPVC by the thread sealant manufacturer must be used.

Note

The PVC pipe has a service life of mere than 50 years which is similar to the average age of an apartment. The polypropylene pipe after its service life can be recycled as per the general process of pipe recycling. The recycled pipes can be used in PP production thereby reduces the demand of virgin material. The pipe can also be sent to the incineration plant or landfills as per the requirement

GENERAL GUIDELINE FOR ALL INSTALLATIONS

DOS

1. Install product according to Astral's Installation instructions and manual and follow recommended safe work practices.
2. Keep Pipe and Fittings in original packaging until needed and store pipes in covered areas.
3. Use tools designed for use with plastic pipe and fittings.
4. Cut-off minimum 25 mm beyond the edge of the crack in case any crack is discovered on the pipe.
- 4A. Pipe may be cut quickly and efficiently by several methods. Wheel-type plastic tubing cutters are preferred. Ratchet type cutters or fine tooth saws are another option. However, when using the ratchet cutter, be certain to score the exterior wall by rotating the cutter blade in a circular motion around the pipe. Do this before applying significant downward pressure to finalise the cut. This step leads to a square cut. In addition, make sure ratchet cutter blades are sharp. Cutting pipe as squarely as possible provides optimal bonding area within a joint.
- 4B. Burrs and filings can prevent proper contact between the tube and fittings during assembly, and should be removed from the outside and inside of the pipe. A chamfering tool is preferred, but a pocket knife or file is also suitable for this purpose.
- 4C. Use only CPVC Cement or an all purpose solvent cement conforming to ASTM F-493 otherwise it may result in joint failure.
5. Always conduct hydraulic pressure testing after installation to detect any leaks and faults. Wait for appropriate cure time before pressure testing. Fill lines slowly and remove air from the system prior to pressure testing.
6. Rotate the pipe 1/4 to 1/2 to spread the CPVC Solvent Cement evenly in the joint while pushing the Pipe into Fitting.
7. Use Teflon tapes with threaded fittings.
8. Ensure that there are no sharp edges in contact with the pipe while embedding the pipes on the walls or in the floors.
- 8A. When making a transition connection to metal threads, use a special transition fitting or CPVC male

threaded adapter whenever possible. Do not over-torque plastic threaded connections. Head tight plus one-half turn should be adequate.

9. Provide Vertical & Horizontal Supports as recommended using the Plastic Straps only.
10. Apply a water-based paint only on exposed pipes & fittings.
11. Visually inspect all joints for proper cementing at the end of shift or day. A Visual inspection of the complete system is also recommended during pressure testing.
12. When connecting to a gas water heater, duct and CPVC should not be located within 50 cm of the duct. For water heaters lacking reliable temperature control, this distance may be increased up to 1 m. A metal nipple or flexible appliance connector should be utilized. This measure eliminates the potential for damage to plastic piping that might result from excessive radiant heat from the duct.
13. Use of a brass/CPVC transition adapter when connecting CPVC to a water heater will help facilitate water heater replacement in the future.
14. Pressure test CPVC systems in accordance with local code requirements.



DON'TS

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

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

The limited warranty only applicable if Astral CPVC PRO Pipes, Fittings & Weld-on solvent cement are used.





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Please get in touch with us between
10 AM to 6 PM between Monday to Saturday
except 1st & 3rd Saturday and Public holidays

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