ASTRAL PIPES

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ASTRAL PIPES

FIREPRO®

CPVC PIPING FOR AUTOMATIC FIRE SPRINKLERS

PRODUCT CATALOGUE

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ASTRAL, INDIA'S PROGRESSIVE PIPE 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 and Sangli in Maharashtra 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 Rex 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.

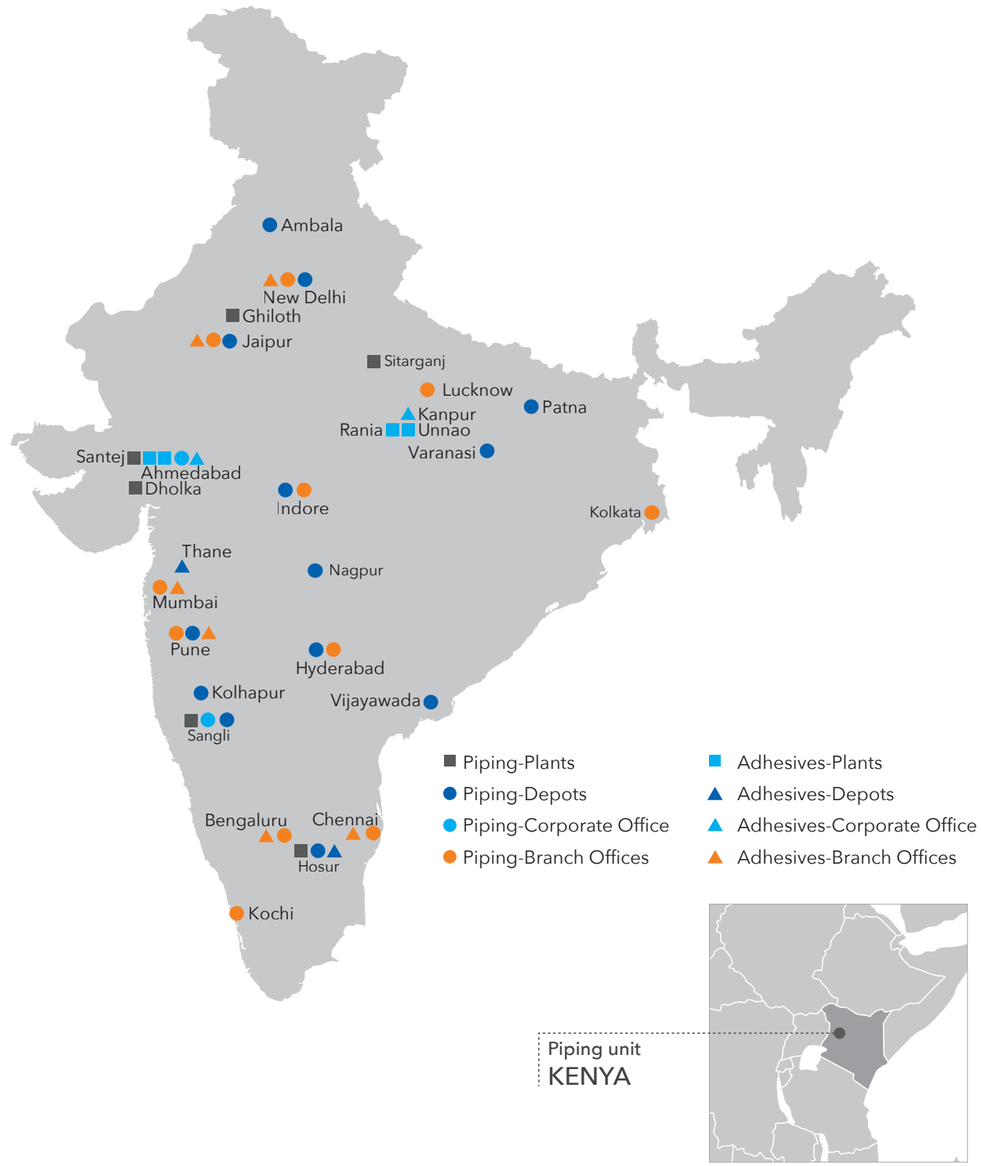
In 2014, Astral forayed into the adhesives category by acquiring UK-based Seal It Services Ltd. and Kanpur based Resinova Chemie Ltd., which manufacture adhesives, sealants and construction chemicals. With five manufacturing facilities now in this business segment, Astral has strengthened its presence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

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)
- 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)

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 Bengaluru, Vijaywada, Hyderabad, Delhi, Ghaziabad, Kolhapur, Pune, Nagpur, Indore, 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 FIREPRO®

Astral Fire Pro pipes and fittings are designed specifically for fire sprinkler system. They are made from a special thermoplastic known chemically as Chlorinated Polyvinyl Chloride (CPVC).

Astral Fire Pro pipes and fittings provide unique advantages in sprinkler installations including superior hydraulics, ease of joining, increased hanger spacing in comparison to other thermoplastics and ease of assembly.

Astral Fire Pro is the new industry standard in automtatic fire sprinkler piping system. Astral Fire Pro CPVC pipes and fittings are fully approved for use in all light and ordinary hazardous rooms or otherwise light hazardous applications as per NFPA 13, in both new and retrofit construction, such as:

- High-rise buildings (including apartments and hotels)
- Schools and Institutions
- One and Two family dwellings

SYSTEM BENEFITS:

- No pre-cutting and expensive fabrication required
- Easily connected to other sprinkler piping system
- Flexibility in the piping for greater ease of installation
- Resistant to rust, scale and foreign contaminant build up, Inexpensive tools required for installation
- Easy repairing or modification on site
- Designed for a 50 year life expectancy

KEY PROPERTIES

IGNITION RESISTANCE

Astral Fire Pro CPVC has a flash ignition temperature of 480°C which is the lowest temperature at which sufficient combustible gas is evolved that can be ignited by a small external flame. Many other ordinary combustibles, such as wood, ignite at 260°C or less. Accordingly, Astral Fire Pro system cannot be the ignition source of a fire.

LOW FRICTION LOSS

With a Hazen-Williams friction coefficient of C=150, Astral Fire Pro's smooth interior surface offers lower friction loss than metal systems, enables to use smaller pipe diameters and save on material costs.

FLAMMABILITY

Astral Fire Pro CPVC is ideal for wet automatic fire sprinkler system due to its outstanding balance of properties such as light weight, excellent corrosion resistance, low friction loss and ease of fabrication. Astral Fire Pro CPVC uniquely offers outstanding resistance to fire and low smoke generation qualities. Because of these features, Astral Fire Pro system can be used in plenum spaces as defined by NFPA 90A, the National Standard for the Installation of Air Conditioning and Ventilating Systems.

FLAME SPREAD/ SMOKE GENERATION

Astral Fire Pro CPVC material is evaluated for the flame spread and smoke generation characteristics.

BURNING RESISTANCE

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

TEMPERATURE / PRESSURE RATING

Astral Fire Pro pipes and fittings (¾" - 3" (20 - 80 mm)) are rated for continuous service of 175 psi (1207 KPa) at 150°F (65°C). Astral Fire Pro pipes and fittings are suitable for use in areas where ambient temperatures are within the range of 35°F (2°C) to 150° F (66°C).

HEAT OF COMBUSTION

Astral Fire Pro CPVC has a significantly lower heat of combustion at 7,700 BTU's/lb, compared to Douglas fir at 9,040 BTU's/lb, and polypropylene at nearly 20,000 BTU's/lb. Materials with a high heat of combustion perpetuate a combustible mixture which ignites creating more heat and the burning process becomes self-sustaining.

TYPICAL PHYSICAL PROPERTIES

Sr No.	Parameter	Unit	Typical Value
1	Density	g/cm^3	1.51
2	Tensile Strength	MPa	55
3	Modulus of Elasticity	MPa	2700
4	Compressive Strength, ps	MPa	62
5	Coefficient of Linear Expansion	in./(in. °F)	3.2×10^{-5}
6	Flame Spread	--	0
7	Smoke Development	--	5-20
8	Limiting Oxygen Index	%	60
9	Flash Ignition Temperature	°C	482
10	Flammability	--	Flame Retardant, V0

ASTRAL FIRE PRO PIPE DIMENSIONS

Conforming to IS:16088 & As per ASTM F442

Nominal Size			Outside Diameter, in. (mm)				Wall Thickness, in. (mm)			
			Average		Tolerance		Minimum		Tolerance	
cm	mm	inch	inch	mm	inch	mm	inch	mm	inch	mm
2.0	20	¾″	1.050	26.7	±0.004	±0.10	0.078	1.98	+0.020	+0.51
2.5	25	1″	1.315	33.4	±0.005	+0.10	0.097	2.46	+0.020	+0.51
3.2	32	1-¼″	1.660	42.2	±0.005	+0.10	0.123	3.12	+0.020	+0.51
4.0	40	1-½″	1.900	48.2	±0.006	+0.10	0.141	3.58	+0.020	+0.51
5.0	50	2″	2.375	60.3	±0.006	+0.10	0.176	4.47	+0.021	+0.53
6.5	65	2-½″	2.875	73.0	±0.007	+0.10	0.213	5.41	+0.026	+0.66
8.0	80	3″	3.500	88.9	±0.008	+0.20	0.259	6.58	+0.031	+0.79

FITTINGS: Astral Fire Pro CPVC Sprinkler fittings conform to the requirement of ASTM F438 (Schedule 40) & ASTM F439 (Schedule 80). Female threaded adapters for sprinkler head connections will contain brass inserts or other suitable metallic inserts.

SOLVENT CEMENT: Astral Fire Pro CPVC socket connections should be joined with IPS weld-on solvent cement which meets ASTM F493. No other solvent cements are recommended for use with Astral Fire Pro products and use of such non-approved welding agents will invalidate the manufacturer's warranty.

ASTRAL FIRE PRO PIPES & FITTINGS GO THROUGH STRINGENT QUALITY TESTS FROM RAW MATERIAL TO PRODUCTION AND THE FINAL PRODUCT.

- Raw Material Test
- Dimensions & Visual Appearance
- Opacity Test
- Reversion Test
- Vicat Softening Temperature Test
- Density Test
- Fire Exposure Test
- Flammability Test
- Short Term & Long Term Hydraulic Pressure Test
- Impact Test
- Flattening Test
- Tensile Strength Test
- Kinking Resistance Test

ASTRAL FIRE PRO CPVC SYSTEM FOR BUILDERS AND DEVELOPERS:

Astral Fire Pro pipes and fittings significantly reduce labour and transportation costs on typical installations because CPVC pipe is easily handled, stored, cut and joined. Prices for Astral Fire Pro CPVC pipes and fittings are more stable than metal system. Plus, heavy equipment needed to install metal and other piping systems is not required with Astral Fire Pro pipes and fittings; As a result, installation cost of Astral Fire Pro CPVC system is significantly lower than metal and other system.

The inherent immunity to Microbiologically Influenced Corrosion (MIC) of Astral Fire Pro pipes and fittings means this system provides a long-term trouble-free installation. Also there is significantly less inconvenience for occupants during retrofit construction.

ASTRAL FIRE PRO CPVC SYSTEM FOR DESIGNERS, ARCHITECTS AND ENGINEERS:

Astral Fire Pro pipes and fittings offer greatly enhanced design flexibility. With a Hazen-Williams C factor of 150, its smooth inner surface results in lower friction loss than metal system. This means you can use smaller pipe diameters which lowers material cost and provides additional design flexibility in retrofit applications.

Astral Fire Pro pipes and fittings have a 50 years life expectancy with a safety factor of two. Properly selected and correctly installed, Astral Fire Pro pipes and fittings provide years of maintenance-free service.

ASTRAL FIRE PRO CPVC SYSTEM FOR CONTRACTORS

Installation of Astral Fire Pro pipes and fittings is fast and easy. No special rigging or heavy equipment is required to move the pipe into a building. Pipe can be cut on-site with simple hand tools. A one-step joining system makes installations fast, keeping labor costs to a minimum. Because no heavy equipment is involved in moving and installing pipes and fittings on-site, there is less conflict with other trades. Work can be done quickly and easily around dry wallers, framers and other mechanical contractors.

Most hangers designed for metal pipe are suitable for Astral Fire Pro CPVC system. Because Astral Fire Pro pipe is rigid and inherently strong, it requires fewer hangers and supports than other thermoplastic pipe, reducing material and labor costs.

SPECIFICATIONS AND STADNARDS :

ASTM F442	Standard Specification for Chlorinated Poly Vinyl Chloride (CPVC) Plastic Pipe (SDR-PR)
ASTM F439	Standard Specification for Chlorinated Poly Vinyl Chloride (CPVC) Plastic Pipe Fittings, Schedule 80
ASTM D1784	Standard Specification for Rigid Poly Vinyl Chloride (PVC) Compounds and Chlorinated Poly Vinyl Chloride (CPVC) Compounds
IS:16088	Chlorinated Polyvinyl Chloride (CPVC) Pipes For Automatic Sprinkler Fire Extinguishing System - Specification
IS:15225	Chlorinated Polyvinyl Chloride Compounds Used for Pipes and Fittings - Specification

PRODUCT

RANGE

FIRE PRO CPVC PIPES
CONFORMING TO IS:16088 & AS PER ASTM F442

FP CPVC SDR 13.5 PIPE (3 MTR. LENGTH)

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
2.0	¾	M541130302	30
2.5	1	M541130303	20
3.2	1¼	M541130304	15
4.0	1½	M541130305	10
5.0	2	M541130306	8
6.5	2½	M541130307	5
8.0	3	M541130308	3

FP CPVC SDR 13.5 PIPE (5 MTR. LENGTH)

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
2.0	¾	M541130502	20
2.5	1	M541130503	15
3.2	1¼	M541130504	10
4.0	1½	M541130505	10
5.0	2	M541130506	6
6.5	2½	M541130507	5
8.0	3	M541130508	3

FIRE PRO CPVC FITTINGS
AS PER ASTM F439

COUPLER

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
2.0	¾	M542801002	300
2.5	1	M542801003	175
3.2	1¼	M542801004	100
4.0	1½	M542801005	80
5.0	2	M542801006	50
6.5	2½	M542801007	33
8.0	3	M542801008	15

ELBOW 90°

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
2.0	¾	M542800502	200
2.5	1	M542800503	125
3.2	1¼	M542800504	60
4.0	1½	M542800505	50
5.0	2	M542800506	25
6.5	2½	M542800507	18
8.0	3	M542800508	12

FIRE PRO CPVC FITTINGS
AS PER ASTM F439

ASTRAL FIREPRO®

REDUCER COUPLER

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
2.5 x 2.0	1 x ¾	M542801116	200
3.2 x 2.0	1¼ x ¾	M542801118	140
3.2 x 2.5	1¼ x 1	M542801119	125
4.0 x 2.0	1½ x ¾	M542801121	100
4.0 x 2.5	1½ x 1	M542801122	100
4.0 x 3.2	1½ x 1¼	M542801123	80
5.0 x 2.0	2 x ¾	M542801125	70
5.0 x 2.5	2 x 1	M542801126	75
5.0 x 3.2	2 x 1¼	M542801127	75
5.0 x 4.0	2 x 1½	M542801128	75
6.5 x 2.0	2½ x ¾	A542801130	As Req.
6.5 x 2.5	2½ x 1	A542801131	As Req.
6.5 x 3.2	2½ x 1¼	M542801132	48
6.5 x 4.0	2½ x 1½	M542801133	40
6.5 x 5.0	2½ x 2	M542801134	40
8.0 x 2.0	3 x ¾	A542801136	As Req.
8.0 x 2.5	3 x 1	A542801137	As Req.
8.0 x 3.2	3 x 1¼	A542801138	As Req.
8.0 x 4.0	3 x 1½	M542801139	30
8.0 x 5.0	3 x 2	A542801140#	30
8.0 x 6.5	3 x 2½	M542801141	30

SPRINKLER HD ADAPTOR

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
2.0 x 1.5	¾ x ½	M542801214	150
2.5 x 1.5	1 x ½	M542801215	100
2.5 x 2.0	1 x ¾	M542801216	100

Note:All the items where product code starts with "A" are assembled items. # Shortly Introducing Reducer fittings are professionally assembled using ASTRAL fittings and bushings. Quantity as per order. Assembled fittings of other sizes and types are also available upon request.

CROSS TEE

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
2.0	¾	M542802402	50
2.5	1	M542802403	50
3.2	1¼	M542802404	30
4.0	1½	M542802405	25
5.0	2	M542802406	15
6.5	2½	M542802407	9
8.0	3	M542802408	6

TEE

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
2.0	¾	M542800102	125
2.5	1	M542800103	80
3.2	1¼	M542800104	45
4.0	1½	M542800105	30
5.0	2	M542800106	18
6.5	2½	M542800107	12
8.0	3	M542800108	7

ONE PIECE FLANGE

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
8.0	3	M542803208	12

CPVC FIRE PRO FITTINGS
AS PER ASTM F439

FEMALE ADAPTOR BRASS THREAD

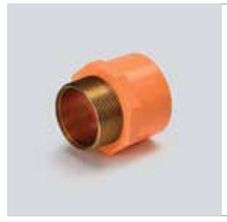
Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
2.0	¾	M542801702	100
2.5	1	M542801703	75
3.2	1¼	M542801704	40
4.0	1½	M542801705	30
5.0	2	M542801706	20
6.5	2½	M542801707	9
8.0	3	M542801708	7

ELBOW 45°

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
2.0	¾	M542802302	200
2.5	1	M542802303	150
3.2	1¼	M542802304	80
4.0	1½	M542802305	60
5.0	2	M542802306	35
6.5	2½	M542802307	20
8.0	3	M542802308	12

SPRINKLER HD ELBOW 90°

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
2.0 x 1.5	¾ x ½	M542800714	75
2.5 x 1.5	1 x ½	M542800715	40



MALE ADAPTOR BRASS THREAD

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
2.0	¾	M542801402	100
2.5	1	M542801403	60
3.2	1¼	M542801404	50
4.0	1½	M542801405	40
5.0	2	M542801406	20
6.5	2½	M542801407	9
8.0	3	M542801408	8

VANSTONE FLANGE

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
2.0	¾	M542803402	80
2.5	1	M542803403	60
3.2	1¼	M542803404	50
4.0	1½	M542803405	35
5.0	2	M542803406	30
6.5	2½	M542803407	18
8.0	3	M542803408	12

SPRINKLER HD BUSH (SPIGOT)

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
2.5 x 1.5	1 x ½	M542802015	250

Note:All the items where product code starts with "A" are assembled items. # Shortly Introducing Reducer fittings are professionally assembled using ASTRAL fittings and bushings. Quantity as per order. Assembled fittings of other sizes and types are also available upon request.

UNION

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
2.0	¾	M542802602	120
2.5	1	M542802603	80
3.2	1¼	M542802604	50
4.0	1½	M542802605	40
5.0	2	M542802606	30
6.5	2½	M542802607#	15
8.0	3	M542802608#	10

END CAP

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
2.0	¾	M542804102	550
2.5	1	M542804103	300
3.2	1¼	M542804104	200
4.0	1½	M542804105	120
5.0	2	M542804106	70
6.5	2½	M542804107	40
8.0	3	M542804108	25

SPRINKLER HD TEE

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
2.0 x 2.0 x 1.5	¾ x ¾ x ½	M5428003100	75
2.5 x 2.0 x 1.5	1 x ¾ x ½	M5428003101	50
2.5 x 2.5 x 1.5	1 x 1 x ½	M542800315	50
2.5 x 1.5 x 2.5	1 x ½ x 1	M542800399	40

REDUCING TEE

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
2.5 x 2.0	1 x ¾	M542800216	100
3.2 x 2.0	1¼ x ¾	M542800218	50
3.2 x 2.5	1¼ x 1	M542800219	50
4.0 x 2.0	1½ x ¾	M542800221	40
4.0 x 2.5	1½ x 1	M542800222	40
4.0 x 3.2	1½ x 1¼	M542800223	30
5.0 x 2.0	2 x ¾	M542800225	25
5.0 x 2.5	2 x 1	M542800226	20
5.0 x 3.2	2 x 1¼	M542800227	20
5.0 x 4.0	2 x 1½	M542800228	20
6.5 x 2.0	2½ x ¾	A542800230	As Req.
6.5 x 2.5	2½ x 1	M542800231	15
6.5 x 3.2	2½ x 1¼	M542800232	15
6.5 x 4.0	2½ x 1½	A542800233	15
6.5 x 5.0	2½ x 2	M542800234	12
8.0 x 2.0	3 x ¾	A542800236	As Req.
8.0 x 2.5	3 x 1	M542800237	10
8.0 x 3.2	3 x 1¼	A542800238	As Req.
8.0 x 4.0	3 x 1½	M542800239	10
8.0 x 5.0	3 x 2	M542800240	9
8.0 x 6.5	3 x 2½	M542800241	9
2.5 x 2.0 x 2.0	1 x ¾ x ¾	A542800295	As Req.
3.2 x 2.5 x 2.0	1¼ x 1 x ¾	A542800296	As Req.
3.2 x 2.5 x 2.5	1¼ x 1 x 1	A542800297	As Req.
4.0 x 3.2 x 2.0	1½ x 1¼ x ¾	A542800298	As Req.
4.0 x 3.2 x 2.5	1½ x 1¼ x 1	A5428002108	As Req.

SPRINKLER HD ADAPTOR (SPIGOT)

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
2.0 x 1.5	¾ x ½	M542809914	150
2.5 x 1.5	1 x ½	M542809915	125

CPVC FIRE PRO FITTINGS
AS PER ASTM F439

REDUCER BUSH

Size (cm)	Size (inch)	Product Code	Std. Pkg. (Nos.)
2.5 x 2.0	1 x ¾	M542801916	400
3.2 x 2.0	1¼ x ¾	M542801918	275
3.2 x 2.5	1¼ x 1	M542801919	250
4.0 x 2.0	1½ x ¾	M542801921	175
4.0 x 2.5	1½ x 1	M542801922	175
4.0 x 3.2	1½ x 1¼	M542801923	150
5.0 x 2.0	2 x ¾	M542801925	100
5.0 x 2.5	2 x 1	M542801926	100
5.0 x 3.2	2 x 1¼	M542801927	100
5.0 x 4.0	2 x 1½	M542801928	100
6.5 x 3.2	2½ x 1¼	M542801932	55
6.5 x 4.0	2½ x 1½	M542801933	55
6.5 x 5.0	2½ x 2	M542801934	70
8.0 x 4.0	3 x 1½	M542801939	35
8.0 x 5.0	3 x 2	M542801940	52
8.0 x 6.5	3 x 2½	M542801941	52

ADHESIVE SOLUTION IPS WELD-ON CPVC 550

Qty. (ml)	Product Code	Std. Pkg. (Nos.)
237	MIPSB237	24
473	MIPSB473	12
946	MIPSB946	12

ASTRAL FIREPRO®

RESCUE TAPE

Size (Ft.)	Product Code	Std. Pkg. (Nos.)
5	RSCU-TAPE-05-CLR	120
5	RSCU-TAPE-05-RED	120
5	RSCU-TAPE-05-BLK	120
10	RSCU-TAPE-10-CLR	120
10	RSCU-TAPE-10-RED	120
10	RSCU-TAPE-10-BLK	120
15	RSCU-TAPE-15-CLR	120
15	RSCU-TAPE-15-RED	120
15	RSCU-TAPE-15-BLK	120

PTFE TAPE

Size (Mtr.)	Product Code	Std. Pkg. (Nos.)
5	PTFE-1205	As Req.
10	PTFE-1210	As Req.
20	PTFE-1220	As Req.

BONDSET FAST SETTING

Qty. (gm)	Product Code	Std. Pkg. (Nos.)
50	BONDSETFS-50	As Req.
100	BONDSETFS-100	As Req.

EXPANSION
& CONTRACTION

FIRE PRO CPVC Fire sprinkler products, like all piping materials, expand and contract with changes in temperature. If the coefficient of linear expansion is 3.4 x 10^{-5} inch / inch-°F, a 25° F (4°C) change in temperature will cause an expansion of 1 inch (25 mm) for a 100-foot (30 m) straight length. For most operating and installation conditions, expansion and contraction can be accommodated at change of direction.

THERMAL EXPANSION BASED ON FIRE PRO CPVC COMPOUND.

Temp Change ΔT °C	Length of Run in Meter													
	1	2	4	6	8	10	12	14	16	18	20	30	40	50
	Thermal Expansion ΔL (cm)													
10	0.06	0.12	0.24	0.37	0.49	0.61	0.73	0.86	0.98	1.10	1.22	1.84	2.45	3.06
15	0.09	0.18	0.37	0.55	0.73	0.92	1.10	1.29	1.47	1.65	1.84	2.75	3.67	4.59
20	0.12	0.24	0.49	0.73	0.98	1.22	1.47	1.71	1.96	2.20	2.45	3.67	4.90	6.12
25	0.15	0.31	0.61	0.92	1.22	1.53	1.84	2.14	2.45	2.75	3.06	4.59	6.12	7.65
30	0.18	0.37	0.73	1.10	1.47	1.84	2.20	2.57	2.94	3.30	3.67	5.51	7.34	9.18
35	0.21	0.43	0.86	1.29	1.71	2.14	2.57	3.00	3.43	3.86	4.28	6.43	8.57	10.71
40	0.24	0.49	0.98	1.47	1.96	2.45	2.94	3.43	3.92	4.41	4.90	7.34	9.79	12.24
45	0.28	0.55	1.10	1.65	2.20	2.75	3.30	3.86	4.41	4.96	5.51	8.26	11.02	13.77
50	0.31	0.61	1.22	1.84	2.45	3.06	3.67	4.28	4.90	5.51	6.12	9.18	12.24	15.30

SUPPORT
SPACING

Since CPVC fire sprinkler pipe is rigid, it requires fewer supports than flexible, plastic systems. Astral Poly Technik Ltd. recommends use of hangers that are designed and listed for supporting the CPVC Fire Sprinkler pipe. However, some hangers designed for steel pipe may be used if their suitability is clearly established.

Note: These hangers must have a minimum ½ inch (13 mm), load-bearing surface and they must be selected to accommodate the specific pipe size. In addition, they can not contain rough or sharp edges that contact the pipe and they must not bend the pipe from axial movement. Vertical runs must be supported so that the weight of the run is not on a fitting or a joint.

STANDARD
SUPPORT SPACING

Nominal Size Inches / (mm)	Max. Support Spacing Feet / (Metres)
¾ (20.0)	5½ (1.67)
1 (25.0)	6 (1.83)
1¼ (32.0)	6½ (1.98)
1½ (40.0)	7 (2.13)
2 (50.0)	8 (2.43)
2½ (65.0)	9 (2.74)
3 (80.0)	10 (3.05)

FITTINGS
& FEATURES

1. **PIPE** CUTTING

- Cut pipe square. As joints are sealed at the base of the fitting socket. An angled cut may result in joint failure.
- Acceptable tools include mitre saw, mechanical cut off saw or wheel cutter. Wheel type cutters must employ a blade designed for plastics.

2. **REMOVE** BURR & BEVEL

- Remove all burrs from inside and outside of pipe with a knife-edge, file or deburring tool Chamfer (bevel) the end of the pipe 10°-15°
- Remove surface dirt, grease or moisture with a clean dry cloth.
- With light pressure, pipe should go one third to one half of the way into the fitting socket. Pipes and Fittings that are too tight or too loose should not be used.

3. APPLICATOR

- Use an applicator that is one half the pipe diameters.
- Too large an applicator will force excessive cement in to the inner side surface of small diameter fittings.
- Too small applicator will not apply sufficient cement to large diameter systems.

4. CEMENT

- Apply a full even layer of cement to the outside of a pipe and medium layer of cement to the inside of a fitting.

5. **JOIN** PIPE & FITTING

- Assemble pipe and fitting socket till it contacts socket bottom. Give pipe a quarter turn. Hold pipe and fitting together until the pipe dose not back out.
- Remove excessive cement from the exterior. A properly made joint will show a continue bead of cement around the perimeter.
- Observe all safety precautions.
- Systems should be installed in a good and workmanlike manner consistent with normal industry standards and in conformance with all local plumbing, fire and building code requirements. Failure to follow proper installation practices, procedures or techniques can result in system failure, property damage or personal injury.
- Pipes and fittings should be used for their intended purpose as defined by local plumbing and building codes and the applicable ASTM standards.
- Follow manufacturer's instructions for all related products.

SET & CURE TIME

Inadequate curing of solvent cement joints may cause pipe failure or leakage.
Solvent cement set and cure time are a function of pipe size, temperature, relative humidity, and tightness of fit. Cure time should be increased when moisture is present such as during cut-ins to live sprinkler lines. The assembly must be allowed to set, without any stress on the joint, for 1 to 5 minutes, depending on pipe size and temperature. Following the initial set period, the assembly can be handled carefully, avoiding significant stresses to the joint. Refer to Tables 1, 2 and 3 for MINIMUM cure time prior to pressure testing.

TABLE 1: AMBIENT TEMPERATURE CURE TIME FOR TEST PRESSURES OF 225 PSi / 15.8 KG/CM² (MAXIMUM)

Nominal Pipe Size (Metric) inch (mm)	60°F to 120°F (16°C to 49°C)	40°F to 59°F (4.4°C to 16°C)	0°F to 39°F (-17.8°C to 4.4°C)
¾" (20)	1 hour	4 hours	48 hours
1" (25)	1½ hours	4 hours	48 hours
1 ¼" & 1 ½" (32 & 40)	3 hours	32 hours	10 days
2" (50)	8 hours	48 hours	Note 1
2 ½" & 3" (65 & 80)	24 hours	96 hours	Note 1

TABLE 2: AMBIENT TEMPERATURE CURE TIME FOR TEST PRESSURES OF 200 PSi / 14.1 KG/CM² (MAXIMUM)

Nominal Pipe Size (Metric) inch (mm)	60°F to 120°F (16°C to 49°C)	40°F to 59°F (4.4°C to 16°C)	0°F to 39°F (-17.8°C to 4.4°C)
¾" (20)	45 minutes	1½ hours	48 hours
1" (25)	45 minutes	1½ hours	48 hours
1 ¼" & 1 ½" (32 & 40)	1½ hours	16 hours	10 days
2" (50)	8 hours	36 hours	Note 1
2 ½" & 3" (65 & 80)	8 hours	72 hours	Note 1

NOTE 1: Solvent cement can be applied at temperatures below 40°F (4.4°C) in all sizes. However, for the 2 inch size & larger, the temperature must be raised to 40°F (4.4°C) or above and allowed to cure as per the recommended times before the system is filled and pressurized.

TABLE 3: AMBIENT TEMPERATURE CURE TIME FOR TEST PRESSURES OF 100 PSi / 7.0 KG/CM² (MAXIMUM)

Nominal Pipe Size (Metric) inch (mm)	60°F to 120°F (16°C to 49°C)	40°F to 59°F (4.4°C to 16°C)	0°F to 39°F (-17.8°C to 4.4°C)
¾" (20)	15 minutes	15 minutes	30 minutes
1" (25)	15 minutes	30 minutes	30 minutes
1 ¼" (32)	15 minutes	30 minutes	2 hours

NOTE: 1-½ inch (40 mm) and larger must be tested ONLY in accordance with Table 1 or Table 2.