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**ASTRAL TOLL FREE
1800 233 7957**
Please get in touch with us
between 10 a.m. to 6 p.m.

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uPVC PIPES FOR AGRICULTURE AND WATER TRANSPORT SYSTEM



Innovations & Recognitions

Astral has been the **first company** to bring **piping innovations** in India

- 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 Brand Award (2015)
- India's Most Trusted Pipe Brand Award (2016)
- ET Inspiring Business Leaders of India Award (2016)
- Fortune India 500 Company (2016)
- Consumer Validated Superbrands India (2017)
- India's Most Consumer-Focused Brands (2018)



*As per Brand Trust Report 2016 by TRA



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 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 enabled it to obtain NSF approval for its CPVC pipes and fittings. Astral went beyond 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 and Ghilot in Rajasthan 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 has recently acquired Rex Polyxtrusion Pvt. Ltd. which enables to expand its product range in terms of offering corrugated piping for drainage & cables, polyolefin cable channels, sewage treatment plants, plastic sheathing ducts, suction hoses, telecommunication PLB ducts and sub-surface drainage systems. This range helps Astral to establish a strong foothold in infrastructure & agriculture sector in the constantly evolving business of piping. Rex has production facilities at Sangli in Maharashtra and Sitarganj in Uttarakhand.

In 2014, Astral forayed into the adhesives category by acquiring UK-based Seal It Services Ltd. and Kanpur based Resinova Chemie Ltd. which manufactures 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.



Plant
Dholka, Gujarat



Brand Astral stands for innovation and for setting new trends in the piping industry. Bringing newer piping technologies and continuous innovation in existing as well as new products has been the focal point at Astral. This special emphasis helps the brand set the bar higher and lead amongst others by example. Astral is also known for its compromise-free quality and exceeds consumer's expectations. Right from introducing new piping technologies to innovative brand communications in the category, Astral's brand mission has been to maintain and grow a commanding presence in the minds of customers and to deliver promised values consistently.

THE SYSTEM:

ASTRAL Aquasafe® system offers wide range of uPVC pressure pipes and fittings. ASTRAL Aquasafe® uPVC pressure pipes are manufactured in accordance with IS 4985 as well as company's standard covering complete range from 20mm to 400mm. They are available in various pressure ratings as defined in IS : 4985. The pipes are provided with plain socket and ring socket (elastomeric seal ring). ASTRAL Aquasafe® pipes and fittings can be joined together by ASTRAL uPVC solvent cement or elastomeric seal ring.

ASTRAL Aquasafe® fittings are manufactured as per IS 7834 as well as company's standards. Both pipes and fittings are grey in colour manufactured from uPVC raw material and hence they are corrosion free forever.

APPLICATIONS:

ASTRAL Aquasafe® pipes and fittings are used for variety of applications like agriculture, irrigation, water supply, industrial process lines, swimming pools and fire fighting mains etc.

ASTRAL Aquasafe® pipes are superior to CI, GI, R.C.C., HDPE pipes and offers multiple advantages like light weight, easy and fast installation, excellent corrosion and chemical resistance, high flow rates, long life and economical.

FEATURE

- Manufactured from quality raw material.
- Easy handling, transportation & installation.
- Excellent chemical resistance.
- Non conductive. • Long life cycle.
- Ease of use. • Better flow for optimum yields.
- Selfit jointing ensures leak proof jointing system for optimum results.
- Manufactured on most sophisticated machines to ensure a superior product every time.
- High strength & durability.
- Non reactive with acidic and alkali substances in water. They are ideal for drain water discharge as well as most of the chemicals.
- UV stabilized and hence suitable for outdoor applications.
- Manufactured under highest quality standards which ensures reliability of the product.





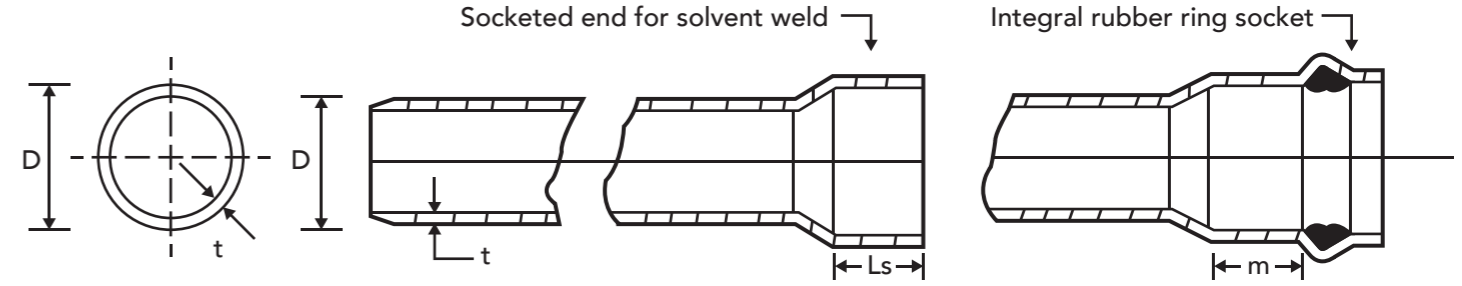
PHYSICAL PROPERTIES OF PVC MATERIALS

| PROPERTY | PVC | ASTM NO. |
|--|---|-----------|
| Mechanical Properties | | |
| Density | 1.41 - 1.46 gm/cc | D 792 |
| Tensile Strength (73 °F) | 48 N/mm ² | D 638 |
| Flexural Strength (73 °F) | 104 N/mm ² | D 790 |
| Compressive Strength (73 °F) | 62 N/mm ² | D 695 |
| Izod Impact (Notched at 73 °F) | 60 J/m | D 256 |
| Hardness (Durometer D) | 80 ± 3 | |
| Hardness (Rockwell R) | 110 -120 | |
| Hydrostatic Design Stress | 140.6 Kg/cm ² | D 1598 |
| Elongation at Break | 50 - 80% | |
| Modulus of Elasticity in Tension (73 °F) | 2500 N/mm ² | D 638 |
| Thermal Properties | | |
| Coefficient of Linear Expansion | 6.3x10 ⁻⁵ m/m/°K | D 696 |
| Vicat Softening Temp. | 80 °C | |
| Heat Deflection Temperature at 66 PSI | 80 °C | D 648 |
| Flame Resistance | Self extinguishing. UPVC does not support combustion when the source of ignition is removed | |
| Limiting Oxygen Index | 43% | D 2863 |
| Electrical Properties | | |
| Electrical Resistance | ≥ 100 Ω | ASTM D876 |
| Dielectric Strength | 1100 | ASTM D147 |
| Dielectric Constant (60Hz 73 °F/-1°C) | 3.7 | ASTM D150 |

Above data is based upon information provided by the raw material manufacturers. It should be used only as a recommendation and not as a guarantee of performance.

ASTRAL Aquasafe pipes and fittings are go through the stringent quality test from raw material to production and at the final product.

- Raw Material Test
- Stress Relief Test
- Dimension & Visual Appearance Test (Dia., Wall Thickness etc.)
- Reversion Test
- Density Test
- Effect on Water Test
- Opacity Test
- Hydrostatic Pressure Test
- Drop Impact Test
- Sulphated Ash Content Test
- Vicat Softening Temperature Test



Dimensions of Sockets for Solvent Cement Jointig

| NOMINAL SIZE (DN) | SOCKET LENGTH (Ls) |
|-------------------|--------------------|
| 20 | 16.0 |
| 25 | 19.0 |
| 32 | 22.0 |
| 40 | 26.0 |
| 50 | 31.0 |
| 63 | 37.5 |
| 75 | 43.5 |
| 90 | 51.0 |
| 110 | 61.0 |
| 140 | 76.0 |
| 160 | 86.0 |
| 180 | 96.0 |
| 200 | 106.0 |
| 225 | 118.5 |
| 250 | 131.0 |
| 280 | 146.0 |
| 315 | 163.5 |
| 400 | 206.0 |

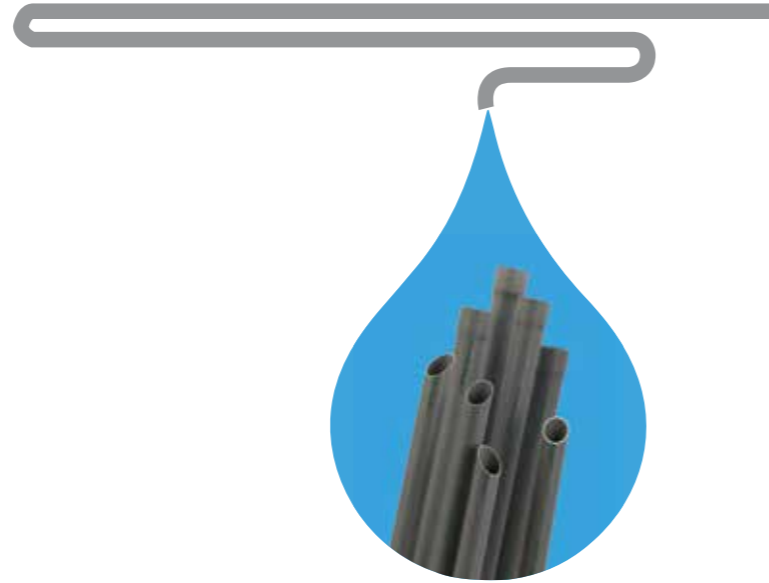
Minimum Depth of Engagment for Elastomeric Ring Socket

| NOMINAL SIZE (DN) | MINIMUM DEPTH OF ENGAGEMENT (m) |
|-------------------|---------------------------------|
| 63 | 64 |
| 75 | 67 |
| 90 | 70 |
| 110 | 75 |
| 140 | 81 |
| 160 | 86 |
| 180 | 90 |
| 200 | 94 |
| 225 | 100 |
| 250 | 105 |
| 280 | 112 |
| 315 | 118 |
| 400 | 130 |

DIMENSIONS OF UPVC PRESSURE PIPES CONFORMING TO IS:4985

| Nominal Outside Diameter | Tolerance on Mean Outside Diameter | WALL THICKNESS | | | | | | | |
|--------------------------|------------------------------------|--------------------------------------|-----|------------------------------------|------|------------------------------------|------|-------------------------------------|------|
| | | Class 1 (PN) 2.5 kgf/cm ² | | Class 2 (PN) 4 kgf/cm ² | | Class 3 (PN) 6 kgf/cm ² | | Class 5 (PN) 10 kgf/cm ² | |
| | | Min | Max | Min | Max | Min | Max | Min | Max |
| 20 | +0.3 | - | - | - | - | - | - | 1.1 | 1.5 |
| 25 | +0.3 | - | - | - | - | - | - | 1.4 | 1.8 |
| 32 | +0.3 | - | - | - | - | - | - | 1.8 | 2.2 |
| 40 | +0.3 | - | - | - | - | 1.4 | 1.8 | 2.2 | 2.7 |
| 50 | +0.3 | - | - | - | - | 1.7 | 2.1 | 2.8 | 3.3 |
| 63 | +0.3 | - | - | 1.5 | 1.9 | 2.2 | 2.7 | 3.5 | 4.1 |
| 75 | +0.3 | - | - | 1.8 | 2.2 | 2.6 | 3.1 | 4.2 | 4.9 |
| 90 | +0.3 | 1.3 | 1.7 | 2.1 | 2.6 | 3.1 | 3.7 | 5.0 | 5.7 |
| 110 | +0.4 | 1.6 | 2.0 | 2.5 | 3.0 | 3.7 | 4.3 | 6.1 | 7.1 |
| 140 | +0.5 | 2.0 | 2.4 | 3.2 | 3.8 | 4.8 | 5.5 | 7.7 | 8.9 |
| 160 | +0.5 | 2.3 | 2.8 | 3.7 | 4.3 | 5.4 | 6.2 | 8.8 | 10.2 |
| 180 | +0.6 | 2.6 | 3.1 | 4.2 | 4.9 | 6.1 | 7.1 | 9.9 | 11.4 |
| 200 | +0.6 | 2.9 | 3.4 | 4.6 | 5.3 | 6.8 | 7.9 | 11.0 | 12.7 |
| 225 | +0.7 | 3.3 | 3.9 | 5.2 | 6.0 | 7.6 | 8.8 | 12.4 | 14.3 |
| 250 | +0.8 | 3.6 | 4.2 | 5.7 | 6.5 | 8.5 | 9.8 | 13.8 | 15.9 |
| 280 | +0.9 | 4.1 | 4.8 | 6.4 | 7.4 | 9.5 | 11.0 | 15.4 | 17.8 |
| 315 | +1.0 | 4.6 | 5.3 | 7.2 | 8.3 | 10.7 | 12.4 | 17.3 | 19.9 |
| 400 | +1.2 | 5.8 | 6.7 | 9.1 | 10.5 | 13.5 | 15.6 | 22.0 | 25.3 |

Availability



uPVC SOLVENT FITTED PRESSURE PIPES CONFIRMING TO IS:4985

| PRESSURE | 20 | 25 | 32 | 40 | 50 | 63 | 75 | 90 | 110 | 140 | 160 | 180 | 200 | 225 | 250 | 280 | 315 | 400 | |
|--------------------------------------|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| 2.5 kgf/cm ² | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 4 kgf/cm ² | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 6 kgf/cm ² | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 10 kgf/cm ² | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 16 kgf/cm ² (Plumbing) | ● | ● | ● | ● | ● | | | | | | | | | | | | | | |

● Confirm to IS:4985 ● Does not confirm to IS:4985

AQUASAFE ELASTOMERIC SEALING RING PIPES CONFIRMING TO IS:4985

| SOCKET | SIZE (mm) | PRESSURE | AVAILABLE |
|--------|-----------|----------------------------------|----------------|
| GR | 110 | 4 / 6 / 10 kgf / cm ² | 3 / 5 / 6 mtr. |
| GR | 140 | 4 / 6 / 10 kgf / cm ² | 3 / 5 / 6 mtr. |
| GR | 160 | 4 / 6 / 10 kgf / cm ² | 3 / 5 / 6 mtr. |
| GR | 180 | 4 / 6 / 10 kgf / cm ² | 3 / 5 / 6 mtr. |
| GR | 200 | 4 / 6 / 10 kgf / cm ² | 3 / 5 / 6 mtr. |
| GR | 225 | 4 / 6 / 10 kgf / cm ² | 3 / 5 / 6 mtr. |
| GR | 250 | 4 / 6 / 10 kgf / cm ² | 3 / 5 / 6 mtr. |
| GR | 280 | 4 / 6 / 10 kgf / cm ² | 3 / 5 / 6 mtr. |
| GR | 315 | 4 / 6 / 10 kgf / cm ² | 3 / 5 / 6 mtr. |



uPVC AQUASAFE PIPE FOR AGRICULTURE AND WATER TRANSPORT SYSTEM

| 3 METRE PIPE | | Aquasafe Solvent Fitted Pipes - For Agriculture & Water Supply Conforming to IS:4985 | | | | |
|--------------|-----|--|------------|------------|------------|---------------|
| SIZE | | WORKING PRESSURE (kg/cm ²) | | | | |
| mm | in. | 2.5 | 4 | 6 | 10 | 16 (Plumbing) |
| 20 | ½ | - | - | - | M081100301 | M081160301 |
| 25 | ¾ | - | - | - | M081100302 | M081160302 |
| 32 | 1 | - | - | - | M081100303 | M081160303 |
| 40 | 1¼ | - | - | M081060304 | M081100304 | M081160304 |
| 50 | 1½ | - | - | M081060305 | M081100305 | M081160305 |
| 63 | 2 | - | M081040306 | M081060306 | M081100306 | - |
| 75 | 2½ | - | M081040307 | M081060307 | M081100307 | - |
| 90 | 3 | M081250308 | M081040308 | M081060308 | M081100308 | - |
| 110 | 4 | M081250309 | M081040309 | M081060309 | M081100309 | - |
| 125 | 4½ | M081250310 | M081040310 | M081060310 | M081100310 | - |
| 140 | 5 | M081250311 | M081040311 | M081060311 | M081100311 | - |
| 160 | 6 | M081250312 | M081040312 | M081060312 | M081100312 | - |
| 180 | 7 | M081250313 | M081040313 | M081060313 | M081100313 | - |
| 200 | 8 | M081250314 | M081040314 | M081060314 | M081100314 | - |
| 225 | 9 | M081250315 | M081040315 | M081060315 | M081100315 | - |
| 250 | 10 | M081250316 | M081040316 | M081060316 | M081100316 | - |
| 280 | 11 | M081250317 | M081040317 | M081060317 | M081100317 | - |
| 315 | 12 | M081250318 | M081040318 | M081060318 | M081100318 | - |
| 400 | 16 | M081250320 | M081040320 | M081060320 | M081100320 | - |

5 METRE PIPE

| SIZE | | WORKING PRESSURE (kg/cm ²) | | | | |
|------|-----|--|------------|------------|------------|---------------|
| mm | in. | 2.5 | 4 | 6 | 10 | 16 (Plumbing) |
| 20 | ½ | - | - | - | M081100501 | M081160501 |
| 25 | ¾ | - | - | - | M081100502 | M081160502 |
| 32 | 1 | - | - | - | M081100503 | M081160503 |
| 40 | 1¼ | - | - | M081060504 | M081100504 | M081160504 |
| 50 | 1½ | - | - | M081060505 | M081100505 | M081160505 |
| 63 | 2 | - | M081040506 | M081060506 | M081100506 | - |
| 75 | 2½ | - | M081040507 | M081060507 | M081100507 | - |
| 90 | 3 | M081250508 | M081040508 | M081060508 | M081100508 | - |
| 110 | 4 | M081250509 | M081040509 | M081060509 | M081100509 | - |
| 125 | 4½ | M081250510 | M081040510 | M081060510 | M081100510 | - |
| 140 | 5 | M081250511 | M081040511 | M081060511 | M081100511 | - |
| 160 | 6 | M081250512 | M081040512 | M081060512 | M081100512 | - |
| 180 | 7 | M081250513 | M081040513 | M081060513 | M081100513 | - |
| 200 | 8 | M081250514 | M081040514 | M081060514 | M081100514 | - |
| 225 | 9 | M081250515 | M081040515 | M081060515 | M081100515 | - |
| 250 | 10 | M081250516 | M081040516 | M081060516 | M081100516 | - |
| 280 | 11 | M081250517 | M081040517 | M081060517 | M081100517 | - |
| 315 | 12 | M081250518 | M081040518 | M081060518 | M081100518 | - |
| 400 | 16 | M081250520 | M081040520 | M081060520 | M081100520 | - |

6 METRE PIPE

| SIZE | | WORKING PRESSURE (kg/cm ²) | | | | |
|------|-----|--|------------|------------|------------|---------------|
| mm | in. | 2.5 | 4 | 6 | 10 | 16 (Plumbing) |
| 20 | ½ | - | - | - | M081100601 | M081160601 |
| 25 | ¾ | - | - | - | M081100602 | M081160602 |
| 32 | 1 | - | - | - | M081100603 | M081160603 |
| 40 | 1¼ | - | - | M081060604 | M081100604 | M081160604 |
| 50 | 1½ | - | - | M081060605 | M081100605 | M081160605 |
| 63 | 2 | - | M081040606 | M081060606 | M081100606 | - |
| 75 | 2½ | - | M081040607 | M081060607 | M081100607 | - |
| 90 | 3 | M081250608 | M081040608 | M081060608 | M081100608 | - |
| 110 | 4 | M081250609 | M081040609 | M081060609 | M081100609 | - |
| 125 | 4½ | M081250610 | M081040610 | M081060610 | M081100610 | - |
| 140 | 5 | M081250611 | M081040611 | M081060611 | M081100611 | - |
| 160 | 6 | M081250612 | M081040612 | M081060612 | M081100612 | - |
| 180 | 7 | M081250613 | M081040613 | M081060613 | M081100613 | - |
| 200 | 8 | M081250614 | M081040614 | M081060614 | M081100614 | - |
| 225 | 9 | M081250615 | M081040615 | M081060615 | M081100615 | - |
| 250 | 10 | M081250616 | M081040616 | M081060616 | M081100616 | - |
| 280 | 11 | M081250617 | M081040617 | M081060617 | M081100617 | - |
| 315 | 12 | M081250618 | M081040618 | M081060618 | M081100618 | - |
| 400 | 16 | M081250620 | M081040620 | M081060620 | M081100620 | - |

AQUASAFE FITTINGS

MOULDED FITTINGS (6 kgf/cm²)

SIZE (mm) PRODUCT CODE Std. Pkg.

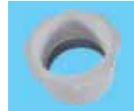
REDUCER BUSH (Spg x Soc)

| | | |
|----------|------------|-----|
| 40x32 | M092061991 | 400 |
| 50x32 | M092061994 | 250 |
| 50x40 | M092061941 | 150 |
| 63x40 | M092061940 | 70 |
| 63x50 | M092061939 | 36 |
| 75x40 | M092061938 | 50 |
| 75x50 | M092061937 | 50 |
| 75x63 | M092061936 | 50 |
| 90x50 | M092061962 | 48 |
| 90x63 | M092061961 | 48 |
| 90x75 | M092061930 | 48 |
| 110x63* | M092061932 | 12 |
| 110x75* | M092061929 | 12 |
| 110x90* | M092061943 | 08 |
| 140x110 | M092061960 | 53 |
| 160x110 | M092061931 | 53 |
| 200x160 | M092061947 | 53 |
| 250x160* | M092061949 | 03 |
| 250x200* | M092061950 | 03 |



THREADED REDUCER BUSH

| | | |
|--------|---|---|
| 75x2* | - | - |
| 90x2½* | - | - |



REDUCER ELBOW

| | | |
|---------|------------|----|
| 75x63 | M092060636 | 32 |
| 90x50 | M092060662 | 24 |
| 90x63 | M092060661 | 20 |
| 110x63 | M092060632 | 12 |
| 110x75 | M092060629 | 12 |
| 110x90* | - | - |



THREADED ELBOW

| | | |
|--------|---|---|
| 63x2* | - | - |
| 75x2½* | - | - |
| 90x3* | - | - |
| 110x4* | - | - |

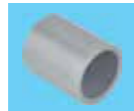


MOULDED FITTINGS (10 kgf/cm²)

SIZE (mm) PRODUCT CODE Std. Pkg.

COUPLER

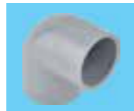
| | | |
|-----|------------|-----|
| 20 | M092101001 | 800 |
| 25 | M092101002 | 500 |
| 32 | M092101003 | 300 |
| 40 | M092101004 | 140 |
| 50 | M092101005 | 80 |
| 63 | M092101006 | 60 |
| 75 | M092101007 | 72 |
| 90 | M092101008 | 45 |
| 110 | M092101009 | 36 |
| 160 | M092101012 | 12 |



SIZE (mm) PRODUCT CODE Std. Pkg.

ELBOW 90°

| | | |
|------|------------|-----|
| 20 | M092100501 | 600 |
| 25 | M092100502 | 400 |
| 32 | M092100503 | 200 |
| 40 | M092100504 | 100 |
| 50 | M092100505 | 60 |
| 63 | M092100506 | 55 |
| 75 | M092100507 | 57 |
| 90 | M092100508 | 28 |
| 110 | M092100509 | 20 |
| 160* | - | - |



SIZE (mm) PRODUCT CODE Std. Pkg.

REDUCER ELBOW

| | | |
|-------|------------|-----|
| 32x25 | M092100658 | 250 |
|-------|------------|-----|



AQUASAFE FITTINGS

MOULDED FITTINGS (10 kgf/cm²)

SIZE (mm) PRODUCT CODE Std. Pkg.

THREADED ELBOW

| | | |
|-------|------------|-----|
| 20x½" | M092100811 | 600 |
| 25x½" | M092100812 | 400 |
| 25x¾" | M092100814 | 350 |
| 32x½" | M092100813 | 025 |



ELBOW 45°

| | | |
|----|------------|-----|
| 20 | M092102301 | 700 |
| 25 | M092102302 | 400 |
| 32 | M092102303 | 200 |



TEE

| | | |
|-----|------------|-----|
| 20 | M092100101 | 400 |
| 25 | M092100102 | 250 |
| 32 | M092100103 | 125 |
| 40 | M092100104 | 60 |
| 50 | M092100105 | 40 |
| 63 | M092100106 | 24 |
| 75 | M092100107 | 30 |
| 90 | M092100108 | 20 |
| 110 | M092100109 | 12 |
| 160 | M092100112 | 05 |



MAPT

| | | |
|-----|------------|-----|
| 20 | M092101301 | 900 |
| 25 | M092101302 | 600 |
| 32 | M092101303 | 300 |
| 63* | - | - |
| 75 | M092101307 | 63 |
| 90 | M092101308 | 40 |
| 110 | M092101309 | 36 |



MOULDED FITTINGS (16 kgf/cm²)

SIZE (mm) PRODUCT CODE Std. Pkg.

REDUCER BRASS TEE

| | | |
|----------|-------------|----|
| 25x25x½" | M062160369 | - |
| 32x32x½" | M0621603109 | 75 |



SIZE (mm) PRODUCT CODE Std. Pkg.

REDUCER BRASS ELBOW

| | | |
|-------|-------------|-----|
| 25x½" | M062160769 | - |
| 32x½" | M0621607109 | 100 |



SIZE (mm) PRODUCT CODE Std. Pkg.

REDUCER BRASS COUPLER

| | | |
|-------|-------------|-----|
| 25x½" | M062161269 | - |
| 32x½" | M0621612109 | 150 |

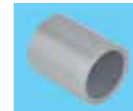


FABRICATED FITTINGS (4 kgf/cm²)

SIZE (mm) PRODUCT CODE Std. Pkg.

FABRICATED COUPLER

| | | |
|-----|------------|-------|
| 63 | F092041006 | 70 |
| 75 | F092041007 | 40 |
| 90 | F092041008 | 30 |
| 110 | F092041009 | 15 |
| 140 | F092041011 | 08 |
| 160 | F092041012 | 05 |
| 180 | F092041013 | Loose |
| 200 | F092041014 | Loose |
| 225 | F092041015 | Loose |
| 250 | F092041016 | Loose |
| 315 | F092041018 | Loose |
| 400 | F092041020 | Loose |



SIZE (mm) PRODUCT CODE Std. Pkg.

FABRICATED BEND 90°

| | | |
|-----|------------|-------|
| 63 | F092040506 | 23 |
| 75 | F092040507 | 13 |
| 90 | F092040508 | 06 |
| 110 | F092040509 | 04 |
| 140 | F092040511 | Loose |
| 160 | F092040512 | Loose |
| 180 | F092040513 | Loose |
| 200 | F092040514 | Loose |
| 225 | F092040515 | Loose |
| 250 | F092040516 | Loose |
| 315 | F092040518 | Loose |



SIZE (mm) PRODUCT CODE Std. Pkg.

FABRICATED BEND 45°

| | | |
|-----|------------|-------|
| 63 | F092044306 | 25 |
| 75 | F092044307 | 15 |
| 90 | F092044308 | 13 |
| 110 | F092044309 | 08 |
| 140 | F092044311 | 04 |
| 160 | F092044312 | Loose |
| 180 | F092044313 | Loose |
| 200 | F092044314 | Loose |
| 225 | F092044315 | Loose |
| 250 | F092044316 | Loose |
| 315 | F092044318 | Loose |



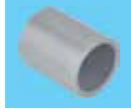
AQUASAFE FITTINGS

FABRICATED FITTINGS (6 kgf/cm²)

SIZE (mm) PRODUCT CODE Std. Pkg.

FABRICATED COUPLER

| | | |
|-----|------------|-------|
| 63 | F092061006 | 70 |
| 75 | F092061007 | 40 |
| 90 | F092061008 | 30 |
| 110 | F092061009 | 15 |
| 140 | F092061011 | 08 |
| 160 | F092061012 | 06 |
| 180 | F092061013 | Loose |
| 200 | F092061014 | Loose |
| 225 | F092061015 | Loose |
| 250 | F092061016 | Loose |
| 315 | F092061018 | Loose |



SIZE (mm) PRODUCT CODE Std. Pkg.

FABRICATED LONG BEND 90°

| | | |
|-----|------------|-------|
| 40 | F092060504 | 50 |
| 50 | F092060505 | 40 |
| 63 | F092060506 | 23 |
| 75 | F092060507 | 13 |
| 90 | F092060508 | 06 |
| 110 | F092060509 | 04 |
| 140 | F092060511 | Loose |
| 160 | F092060512 | Loose |
| 180 | F092060513 | Loose |
| 200 | F092060514 | Loose |
| 225 | F092060515 | Loose |
| 250 | F092060516 | Loose |
| 315 | F092060518 | Loose |



SIZE (mm) PRODUCT CODE Std. Pkg.

FABRICATED BEND 45°

| | | |
|-----|------------|-------|
| 63 | F092064306 | 25 |
| 75 | F092064307 | 15 |
| 90 | F092064308 | 13 |
| 110 | F092064309 | 08 |
| 140 | F092064311 | 04 |
| 160 | F092064312 | Loose |
| 180 | F092064313 | Loose |
| 200 | F092064314 | Loose |
| 225 | F092064315 | Loose |
| 250 | F092064316 | Loose |
| 315 | F092064318 | Loose |



FABRICATED FITTINGS (10 kgf/cm²)

SIZE (mm) PRODUCT CODE Std. Pkg.

FABRICATED COUPLER

| | | |
|-----|------------|-------|
| 20 | F092061001 | - |
| 25 | F092061002 | - |
| 32 | F092061003 | - |
| 40 | F092101004 | - |
| 50 | F092101005 | - |
| 63 | F092101006 | 70 |
| 75 | F092101007 | 40 |
| 90 | F092101008 | 30 |
| 110 | F092101009 | 15 |
| 140 | F092101011 | 08 |
| 160 | F092101012 | 06 |
| 180 | F092101013 | Loose |
| 200 | F092101014 | Loose |
| 225 | F092101015 | Loose |
| 250 | F092101016 | Loose |
| 315 | F092101018 | Loose |
| 400 | F182105220 | Loose |



SIZE (mm) PRODUCT CODE Std. Pkg.

FABRICATED BEND 90°

| | | |
|-----|------------|-----|
| 20 | F092060501 | 200 |
| 25 | F092060502 | 120 |
| 32 | F092060503 | 70 |
| 40 | F092100504 | 50 |
| 50 | F092100505 | 40 |
| 63 | F092100506 | 23 |
| 75 | F092100507 | 13 |
| 90 | F092100508 | 06 |
| 110 | F092100509 | 04 |



SIZE (mm) PRODUCT CODE Std. Pkg.

FABRICATED BEND 45°

| | | |
|-----|------------|-------|
| 63 | F092104306 | 25 |
| 75 | F092104307 | 15 |
| 90 | F092104308 | 13 |
| 110 | F092104309 | 08 |
| 140 | F092104311 | 04 |
| 160 | F092104312 | Loose |
| 180 | F092104313 | Loose |
| 200 | F092104314 | Loose |
| 225 | F092104315 | Loose |
| 250 | F092104316 | Loose |
| 315 | F092104318 | Loose |



ADHESIVE SOLUTION

SIZE (mm) PRODUCT CODE Std. Pkg.

IPS WELD-ON UPVC 100™ SOLVENT CEMENT

| | | |
|--------|--------------|----|
| 237 ml | TIMPS100U237 | 24 |
| 473 ml | TIMPS100U473 | 12 |
| 946 ml | TIMPS100U946 | 12 |



SIZE (mm) PRODUCT CODE Std. Pkg.

RUBBER LUBRICANT

| | | |
|--------|-------------|-----|
| 100 gm | STINS - 100 | 100 |
| 250 gm | STINS - 250 | 40 |
| 500 gm | STINS - 500 | 20 |



Always Use ASTRAL Aquasafe® Pipes With Fittings & For Joining Use ASTRAL uPVC Adhesive Solution

Rubber Lubricants are not Under Licence of IPS.



Friction Loss

FRICION LOSS CALCULATION

Flow of fluid through a pipe is resisted by viscous shear stresses within the fluid and the turbulence that occurs along the internal pipe wall which is dependent on the roughness of the pipe material.

This resistance is termed pipe friction and is usually measured in feet or metres head of the fluid which is why it is also referred to as the head loss due to pipe friction.

Overall head loss in a pipe is affected by a number of factors which include the viscosity of the fluid, the size of the internal pipe diameter, the internal roughness of the inner surface of the pipe, the change in elevation between the ends of the pipe and the length of the pipe along which the fluid travels.

Following Hazen Williams formula should be used for friction loss calculation.

Where

hf : Head loss in m

L : Length of pipe section in m

Q : Discharge in liters / sec

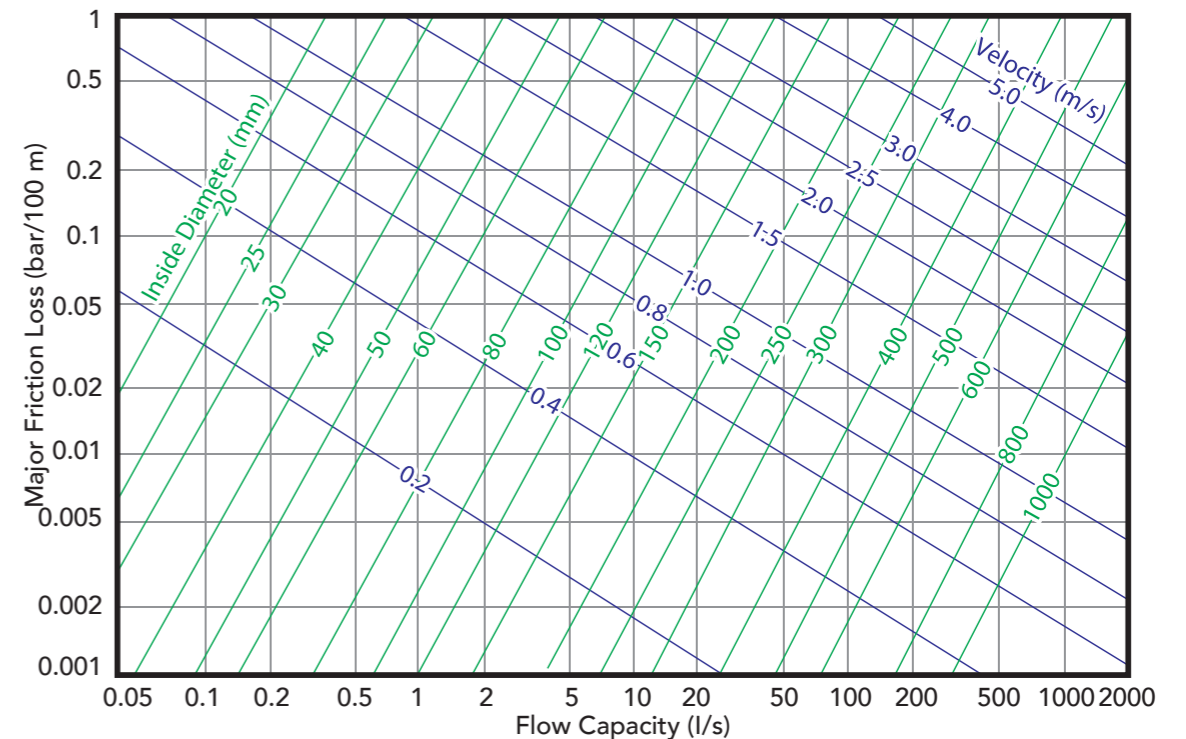
D : Internal diameter of pipe in mm

C : Hazen William constant 150

(For design purpose consider 140)

$$\frac{hf}{L} = \frac{1.213 \times 10^{10} \times Q^{1.852}}{D^{4.87} \times C^{1.852}}$$

Flow diagram of ASTRAL UPVC pipes
(based on Hazen Williams formula)



Note : Above graph is the schematic representation of friction loss for specific value of friction loss use Hazen Williams formula

Ringfit Joining Method



1. CUT PIPE: Cut pipe square. As joints are sealed at the base of the fitting socket. An angled cut may result in joint failure.



2. REMOVE BURR AND BEVEL: Remove all burr from inside and outside of pipe with a knife-edge file, or deburring tool. Chamfer (bevel) the end of the pipe 10° -15°.

CLEAN: Remove surface dirt, grease or moisture with a clean dry cloth.



3. INSERT PIPE: Insert the pipe in to the socket without the seal ring and mark along the pipe, when it is fully inserted.



4. FIX RUBBER RING: Fix the rubber ring in the groove without twisting it.



5. APPLY LUBRICANT: Apply jointing lubricant to the chamfered end of the pipe & on rubber ring up to the mark made on spigot or to the socket end of fitting.

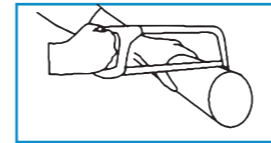


6. JOIN PIPE AND FITTINGS: Push the pipe firmly into the socket till the gap between the mark on the spigot and the socket is about 10 mm to allow thermal expansion.

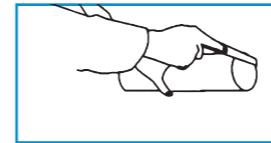


“While laying big pipelines, provision should be made for expansion joints, air vents and proper anchorage.”

Selfit Joining Method

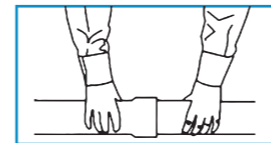


1. CUT PIPE: Cut pipe square. As joints are sealed at the base of the fitting socket. An angled cut may result in joint failure.



2. REMOVE BURR AND BEVEL: Remove all burr from inside and outside of pipe with a knife-edge file, or deburring tool. Chamfer (bevel) the end of the pipe 10° -15°.

CLEAN: Remove surface dirt, grease or moisture with a clean dry cloth.

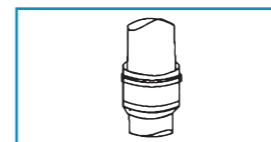


3. DRY FIT: With light pressure, pipe should go one third to one half of the way into the fitting socket.

Pipes and fittings that are too tight or too loose should not be used.



4. APPLY SOLVENT 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 AND FITTINGS: Assemble pipe and fitting socket till it contacts socket bottom. Hold pipe and fitting together until the pipe does not back out. Remove excessive cement from the exterior. A perfect made joint will show a continuous bead of cement around the perimeter.



- Quality of solvent cement plays an important role and hence it is recommended to use good quality solvent cement only.
- For large diameter and higher class pipes (6 Kgf/cm² and above) always use heavy duty solvent cement.
- Very old, hard, semi-fluid solvent cement should not be used.



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, iron angles, 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 pipe with the thickest walls should be at the bottom.

The pipe 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 pipe is 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 problem which could be caused by the slightly lower impact strength of uPVC pipe at temperature below freezing.

