



# C.R.I. PIPES

## ONE STOP PIPING SOLUTION



*Quality in every inch.*

C.R.I.–the name itself encapsulates the company's ethos:

C.R.I. has now become a household name associated with pumps, pipes, wires & cables, valves and solar system – be it for Residential, Agriculture, Industries, Building, Waste Water, Mining, Oil & Gas & Civil Applications, Solar System.





## Vision, Mission and Values

To be the industry leader providing best-in-class fluid management solutions to individual and institutional customers and societies in our chosen markets.

We will achieve this through our dedicated efforts to enhance the welfare of all our stakeholders and by living by our values of **commitment, reliability** and **innovation**.

## ABOUT C.R.I. PIPES

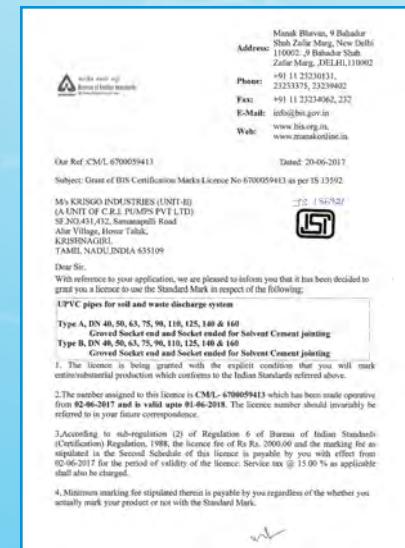
C.R.I.'s vast experience and successful track record in pump industry spanning over 5 decades facilitates to foray into Pipe segment with its state-of-the-art manufacturing facility at Ahmedabad & Hosur. The plants are manufacturing best quality uPVC & CPVC Plumbing pipes and fittings, uPVC Column pipes, uPVC Pressure Pipes & Fittings, HDPE, SWR, Casing & Screen Pipes. The plants are empowered with fully automated machines that control the manufacturing process.

### Unique features:

- More than 5 decades of engineering expertise.
- Strong distribution network of over 5000 channel partners and 1500 service centers operated through 38 sales offices across the Globe.
- Fortified presence, globally over 120 countries across six continents.
- Pipes production capacity of 40,000 metric tones per annum.
- Total production area over 3 lakh square metre, fully equipped with World class machineries
- Fludyn Advanced Technology Centre, a state-of-the-art R&D wing has more than 100 Engineers and is facilitated with latest design tools, softwares and prototyping & testing facilities. It is Recognized by The Ministry of Science & Technology, Govt. of India.



# CERTIFICATIONS



# uPVC PLUMBING PIPES & FITTINGS

## For Cold water applications

C.R.I. is privileged to introduce lead free ASTM uPVC solvent weld plumbing system. uPVC pipes and fittings are lead free and hence non-toxic, easy to install and are made for lifetime trouble free service. These pipes & fittings are manufactured as per ASTM D 1785 and ASTM D 2467 respectively and are available in sizes from 15mm to 150mm in SCH 40 & SCH 80 Classes.



## FIELDS OF APPLICATION

Plumbing application in buildings, Water distribution mains, Swimming pools, Salt water lines, Aggressive / corrosive fluid transportation.

## FEATURES

- **UV Resistant** - C.R.I. uPVC Pipes are Resistant to Ultraviolet sun rays which ensures longer life.
- **Lead Free** - These pipes are lead free thus safer for potable drinking water transportation.
- **Strong & Light Weight** - The pipes are light in weight for easy handling and have good mechanical strength & toughness.

The pipes are free from weaknesses caused by rusting, weathering and chemical action, and hence lasts for a lifetime.

- **Fire Resistant** - C.R.I. uPVC pipes & fittings are fire resistant and self-extinguishing.
- **Easy to Install** - No special tools required for installing. The pipes and fittings are easily joined using solvent cements.
- **Cost Effective** - Easy installation helps to reduce the cost.

## TECHNICAL DETAILS

Dimensions and water pressure rating at 23°C as per ASTM D-1785

<b>Nominal Size</b>	ASTM		SCH - 40				SCH - 80				
	<b>mm</b>	<b>Outside Diameter in mm(Min)</b>	<b>Outside Diameter in mm(Max)</b>	<b>Wall Thickness in mm(Min)</b>	<b>Wall Thickness in mm(Max)</b>	<b>Working Pressure</b>		<b>Wall Thickness in mm(Min)</b>	<b>Wall Thickness in mm(Max)</b>	<b>Working Pressure</b>	
						<b>kgf/cm<sup>2</sup></b>	<b>psi</b>			<b>kgf/cm<sup>2</sup></b>	<b>psi</b>
15	21.24	21.44	2.77	3.28	42.19	600	3.73	4.24	59.76	850	
20	26.57	26.77	2.87	3.38	33.75	480	3.91	4.42	48.51	690	
25	33.27	33.53	3.38	3.89	31.58	450	4.55	5.08	44.29	630	
32	42.03	42.29	3.56	4.07	26.01	370	4.85	5.43	36.56	520	
40	48.11	48.41	3.68	4.19	23.20	330	5.08	5.69	33.04	470	
50	60.17	60.47	3.91	4.42	19.69	280	5.54	6.20	28.12	400	
65	72.84	73.20	5.16	5.77	21.69	300	7.01	7.85	29.55	420	
80	88.70	89.10	5.49	6.15	18.24	260	7.62	8.53	25.98	370	
100	114.07	114.53	6.02	6.73	15.48	220	8.56	9.58	22.51	320	
125	141.05	141.55	6.55	7.34	13.34	190	9.52	10.66	20.38	290	
150	168.00	168.56	7.11	7.97	12.63	180	10.97	12.29	19.66	280	

# CPVC PLUMBING PIPES & FITTINGS

## For Hot & Cold water applications

C.R.I. CPVC (Chlorinated Polyvinyl Chloride) pipes and fittings are the quality plumbing system for carrying hot and cold water. These pipes & fittings are manufactured as per the standards of IS 15778 & ASTM D 2846 in sizes from 15mm to 50mm with the class of SDR 11 & SDR 13.5 and ASTM F 441 for higher diameter pipe sizes from 65mm to 100mm with the class of SCH 40 & SCH 80 and ASTM F438 for SCH 40 & ASTM F439 for SCH 80 Fittings. The advantages of PVC and Chlorine, results in carrying hot water at a maximum temperature of 82°C and are maintenance free for life.



## FIELDS OF APPLICATION

Plumbing application in buildings, Water distribution mains Industrial process lines, Swimming pools, Salt water lines, Aggressive / corrosive fluid transportation, Sugar, paper and distillery industry, Coal washing and ash handling, Pipes for hand pumps.

## FEATURES

- **Corrosion & Chemical Resistant** - C.R.I. CPVC pipes and fittings have excellent chemical resistance properties to withstand salty and chlorinated water conditions.
- **Fire Resistant** - C.R.I. CPVC pipes & fittings are fire resistant and self-extinguishing.
- **Heat & Pressure Resistant** - Since it has high heat & pressure resistance properties, these pipes are preferred to carry potable hot & cold water in residential and commercial buildings.
- **Maintenance Free** - C.R.I. CPVC pipes & fittings are free from corrosion, rust, weathering & leakage and ensures years of trouble free performance.
- **Easy to Install** - No special tools required for installing. The pipes and fittings are easily joined using solvent cements.
- **Low Thermal Expansion & Contraction**- C.R.I. CPVC pipes and fittings have lower thermal expansion & contraction compared to other thermoplastics and metal pipes. Therefore, distortion of pipelines due to flow of hot water and thus leading to looping is reduced.

## TECHNICAL DETAILS

**Dimensions and water pressure rating as per IS : 15778 : 2007**

Nominal Size	Outer Diameter (D) in mm		SDR 11				SDR 13.5			
			Wall Thickness (t) in mm		Working Pressure at (kgf/cm <sup>2</sup> )		Wall Thickness (t) in mm		Working Pressure at (kgf/cm <sup>2</sup> )	
	mm	Min	Max	Min	Max	27° C	82° C	Min	Max	27° C
15	15.8	16.0	1.7	2.2	28.10	6.90	1.4	1.9	22.20	5.60
20	22.1	22.3	2.0	2.5	28.10	6.90	1.7	2.2	22.20	5.60
25	28.5	28.7	2.6	3.1	28.10	6.90	2.1	2.6	22.20	5.60
32	34.8	35.0	3.2	3.7	28.10	6.90	2.6	3.1	22.20	5.60
40	41.2	41.4	3.8	4.3	28.10	6.90	3.1	3.6	22.20	5.60
50	53.9	54.1	4.9	5.5	28.10	6.90	4.0	4.6	22.20	5.60

**Dimensions and water pressure rating as per ASTM F441**

Nominal Size	Outer Diameter (D) in mm		SCH 40				SCH 80			
			Wall Thickness (t) in mm		Working Pressure at (kgf/cm <sup>2</sup> )		Wall Thickness (t) in mm		Working Pressure at (kgf/cm <sup>2</sup> )	
	mm	Min	Max	Min	Max	27° C	82° C	Min	Max	27° C
65	72.84	73.20	5.16	5.77	21.00	5.30	7.01	7.85	29.50	7.30
80	88.70	89.10	5.49	6.15	18.20	4.60	7.62	8.53	25.90	6.30
100	114.07	114.53	6.02	6.73	15.50	3.90	8.56	9.58	22.50	5.60

## uPVC SWR PIPES & FITTINGS

C.R.I. uPVC SWR (Solid, Waste & Rainwater) pipes is manufactured as per IS 13592:2013 standard available in 75, 90, 110 & 160mm in solvent and ring fit types. The fittings are manufactured in sizes 40mm to 160mm as per IS 14735 : 1999. C.R.I. SWR drainage system is designed for quick and efficient removal of waste without leakage. It is highly resilient, tough and durable with high tensile and impact strength. Moreover it is free from scale formation, rusting, weathering and chemical action. It is virtually immune to attack by bacteria, fungi, micro-organisms and insects. Thus the system is a long term solution for building drainage with estimated life over 50 years.



## FEATURES AND BENIFITS

- Manufactured from high quality uPVC compound offering high strength and durability.
- Processed at high end and latest state of the art equipment keeps up with the consistency in quality and the prescribed specifications.
- **Chemical properties** – Non corrosive, ensures longer life cycle.
- **Physical properties** – Lighter in weight than conventional metal pipes, easy handling, transportation and installation
- **Longer life** – Life cycle upto 50 years, saves replacement and replenishment costs.
- **Anti corrosive & Non-conductive** – Excellent life avoiding electro chemical reactions.
- **Convenient and reliable** – Provides easy and stronger joints.  
Adequate and easy access for cleaning and clearing obstructions.
- **Less maintenance** - Once installed C.R.I. SWR drainage system needs minimal or no maintenance.
- **Cost effective** - SWR drainage system is more cost effective than any conventional drainage system.

## TECHNICAL DETAILS

Specifications for SWR Solvent Fit & Ring Fit PVC Pipes

NOMINAL DIAMETER DN	MEAN OUTSIDE DIAMETER OF PIPE		OUTSIDE DIAMETER OF PIPE AT ANY POINT		WALL THICKNESS	
	Min.	Max.	Min.	Max.	Min.	Max.
75 A	75	75.3	74.1	75.9	1.8	2.2
75 B	75	75.3	74.1	75.9	3.2	3.8
90 A	90	90.3	88.9	91.2	1.9	2.3
90 B	90	90.3	88.9	91.2	3.2	3.8
110 A	110	110.4	108.6	111.4	2.2	2.7
110 B	110	110.4	108.6	111.4	3.2	3.8
160 A	160	160.5	158	162	3.2	3.8
160 B	160	160.5	158	162	4.2	4.8

NOTE : As per IS 13592 : 2013 TYPE A pipes are recommended for use in ventilation pipe work and rain water application and TYPE B pipes are recommended for use in soil and waste discharge system. Pipes are available in 2, 3, 4, 6 and 10 feet lengths in single and double sockets in all sizes.

### Consumption of Rubber Lubricant

Size in mm	75	90	110	160
No. of joints / kg.	500	400	300	200

### Maximum Support Distance in Meters

Size in mm	75	90	110	160
Horizontal	0.75	0.9	1.1	1.6
Vertical	2	2	2	2

# uPVC COLUMN PIPES

## Coupler & Bell Mouth Type

These pipes are specially designed for submersible pumps, capable of handling both internal hydrostatic pressure as well as high tensile load caused by the pump weight & column water pressure and weight. In general the first pipe fitted with the pump will be subjected to high hydrostatic pressure and the top most one has to withstand the entire weight of the column water & pump. These pipes are available in 33, 42, 48, 60, 75, 88, 113, and 140 mm sizes of outer diameter under ESPY, Elite, Medium, Standard, Heavy and Super Heavy types. The Maximum Working Head for Coupler type is upto 450 mtrs and for Bell Mouth upto 300 mtrs.

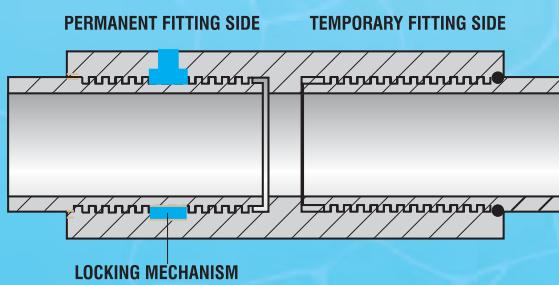


## FEATURES

- Rigid construction & longer life span of upto 25 years.
- Best alternate for G.I. Pipes and are corrosion free & cost effective.
- Special care is taken while fixing couplers with pipes to avoid column slippage.
- Specially designed square threads are capable of withstanding heavy load.
- PBTS (Polymer Bonded Thread Sink) locking system enhances reliability.
- Special rubber seal is provided at the end of threads to ensure 100% leak proof even at high pressure.
- A special rubber (EPDM - high strand) ring is provided in the coupling between the 2 pipes to absorb the vibration caused due to high pressure.
- Internal surface of these pipes are very smooth, resulting in very low head loss due to friction and increases water discharge upto maximum of 30%, compared with traditional G.I. pipes thereby saving power.
- Because of this light weight characteristic & Special Square thread design these pipes can be tightened easily by hand and no need of pipe wrench.
- uPVC column pipes are resistant to chemical reactions when used in acidic or alkaline waters assuring long life.
- Handles water with maximum temperature upto 45°C.
- These pipes come in 3metre standard length and are of light weight ensuring easy handling and storage. Also supplied in 1.5metre length on request.
- Can be used in sun light because of it UV stability.

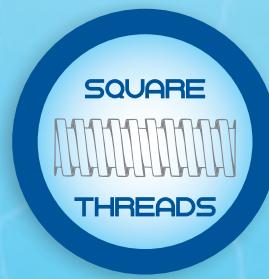
### PBTS - LOCKING SYSTEM

(Polymer Bonded Thread sink)



The pipe couplers are locked with a special locking mechanism called PBTS. Advantage of this system is, it cannot be un-threaded and dismantled and will provide rigid locking. It will withstand high tensile force, ensures durability of the joints, and also acts as leak proof.

### SQUARE THREADS



The pipe joints have been specially designed with square threads & rubber rings made off Vinoprene, to ensure proper gripping & 100% leak proof. These are high friction threads on load, which do not open even on constant forward & reverse torque generated by starting and stopping the pump.

## C.R.I. uPVC COLUMN PIPES - COUPLER

Dimension & Weight details

ESPY TYPE	OUTER DIAMETER	NOMINAL DIAMETER	WALL THICKNESS AT ENDS (mm)		WALL THICKNESS AT BARELL (mm)		MAX. RECOMMENDED INSTALLATION DEPTH in metre	NO. OF PIPES PER BUNDLE	ULTIMATE BREAKING LOAD in kg	SAFE PULLING LOAD WITH CHAIN PULLEY in kg
	mm	mm	Min	Max	Min	Max				
	33	25	3.40	3.60	1.60	1.80		125	25	800
42	32	3.70	4.00	2.00	2.30	125	25	1350	770	
48	40	3.80	4.10	2.40	2.70	125	20	1750	1000	

ELITE TYPE	OUTER DIAMETER	NOMINAL DIAMETER	WALL THICKNESS AT ENDS (mm)		WALL THICKNESS AT BARELL (mm)		MAX. RECOMMENDED INSTALLATION DEPTH in metre	NO. OF PIPES PER BUNDLE	ULTIMATE BREAKING LOAD in kg	SAFE PULLING LOAD WITH CHAIN PULLEY in kg
	mm	mm	Min	Max	Min	Max				
	33	25	25	3.60	3.90	1.70	2.00	150	25	1000700
42	32	32	4.70	5.00	2.50	2.80	2.80	150	25	15001000
48	40	40	5.00	5.30	2.80	3.10	3.10	150	20	20001200
60	50	50	4.50	4.80	2.40	2.70	2.70	90	15	25001300

MEDIUM TYPE	OUTER DIAMETER	NOMINAL DIAMETER	WALL THICKNESS AT ENDS (mm)		WALL THICKNESS AT BARELL (mm)		MAX. RECOMMENDED INSTALLATION DEPTH in metre	NO. OF PIPES PER BUNDLE	ULTIMATE BREAKING LOAD in kg	SAFE PULLING LOAD WITH CHAIN PULLEY in kg
	mm	mm	Min	Max	Min	Max				
	33	25	4.20	4.50	2.00	2.30	210	25	1400	770
42	32	5.10	5.40	3.10	3.40	210	20	2100	1200	
48	40	5.50	5.80	3.30	3.60	210	15	2500	1300	
60	50	5.30	5.60	2.80	3.10	130	15	2800	1500	
75	65	5.30	5.60	2.80	3.10	100	10	3500	1900	
88	80	6.00	6.30	3.40	3.70	110	8	5000	2750	
113	100	6.30	6.60	3.80	4.10	100	5	7500	4100	
Plus	60	50	5.60	5.9	3.4	3.7	170	10	3150	1850

STANDARD TYPE	OUTER DIAMETER	NOMINAL DIAMETER	WALL THICKNESS AT ENDS (mm)		WALL THICKNESS AT BARELL (mm)		MAX. RECOMMENDED INSTALLATION DEPTH in metre	NO. OF PIPES PER BUNDLE	ULTIMATE BREAKING LOAD in kg	SAFE PULLING LOAD WITH CHAIN PULLEY in kg
	mm	mm	Min	Max	Min	Max				
	33	25	5.40	5.70	3.30	3.60	300	25	1800	1300
42	32	5.70	6.00	3.50	3.80	260	20	2500	1500	
48	40	6.30	6.60	4.00	4.30	260	15	3000	1700	
60	50	6.50	6.80	4.00	4.30	200	10	3800	2100	
75	65	6.80	7.10	4.40	4.70	160	8	5000	2700	
88	80	8.00	8.30	5.40	5.70	170	5	7000	4000	
113	100	8.20	8.50	5.70	6.00	150	4	10300	5700	
140	125	10.30	10.6	7.6	7.9	160	2	16500	9700	

HEAVY TYPE	OUTER DIAMETER	NOMINAL DIAMETER	WALL THICKNESS AT ENDS (mm)		WALL THICKNESS AT BARELL (mm)		MAX. RECOMMENDED INSTALLATION DEPTH in metre	NO. OF PIPES PER BUNDLE	ULTIMATE BREAKING LOAD in kg	SAFE PULLING LOAD WITH CHAIN PULLEY in kg
	mm	mm	Min	Max	Min	Max				
	42	32	6.60	6.90	4.50	4.80	350	15	3100	1550
48	40	7.60	7.90	5.20	5.50	350	12	4000	2000	
60	50	8.10	8.40	5.40	5.70	270	10	4700	2850	
75	65	9.20	9.60	6.40	6.70	260	6	7000	4200	
88	80	10.10	10.40	7.60	7.90	260	5	9500	5700	
113	100	11.90	12.30	9.40	9.70	260	3	16000	9500	
140	125	15.32	15.62	11.9	12.2	260	2	24000	14600	
Plus	63	50	8.70	9.1	6.2	6.5	300	8	5750	3400

SUPER HEAVY TYPE	OUTER DIAMETER	NOMINAL DIAMETER	WALL THICKNESS AT ENDS (mm)		WALL THICKNESS AT BARELL (mm)		MAX. RECOMMENDED INSTALLATION DEPTH in metre	NO. OF PIPES PER BUNDLE	ULTIMATE BREAKING LOAD in kg	SAFE PULLING LOAD WITH CHAIN PULLEY in kg
	mm	mm	Min	Max	Min	Max				
	42	32	7.80	8.1	5.3	5.6	400	12	3150	1850
60	50	9.20	9.50	6.80	7.10	350	8	5600	3500	
75	65	11.30	11.60	8.80	9.10	350	5	8600	4800	
88	80	12.80	13.10	10.00	10.30	350	4	11900	6600	
113	100	15.10	15.40	12.60	13.00	350	2	19800	11000	
140	125	19.00	19.3	15.6	15.9	350	2	30500	18600	
Plus	42	32	8.50	8.80	6.00	6.3	450	12	3500	2100

## C.R.I. uPVC COLUMN PIPES - BELLMOUTH

Dimension & Weight details

ESPY TYPE	OUTER DIAMETER	NOMINAL DIAMETER	WALL THICKNESS AT ENDS (mm)		WALL THICKNESS AT BARELL (mm)		MAX. RECOMMENDED INSTALLATION DEPTH in metre	NO. OF PIPES PER BUNDLE	ULTIMATE BREAKING LOAD in kg	SAFE PULLING LOAD WITH CHAIN PULLEY in kg
	mm	mm	Min	Max	Min	Max				
	33	25	3.40	3.60	1.60	1.80		25	650	460
	42	32	3.70	4.00	2.00	2.30	125	25	1100	725
	48	40	3.80	4.10	2.40	2.70	125	20	1300	800

ELITE TYPE	OUTER DIAMETER	NOMINAL DIAMETER	WALL THICKNESS AT ENDS (mm)		WALL THICKNESS AT BARELL (mm)		MAX. RECOMMENDED INSTALLATION DEPTH in metre	NO. OF PIPES PER BUNDLE	ULTIMATE BREAKING LOAD in kg	SAFE PULLING LOAD WITH CHAIN PULLEY in kg
	mm	mm	Min	Max	Min	Max				
	33	25	3.60	3.90	1.70	2.00	150	25	900	630
	42	32	4.70	5.00	2.50	2.80	150	25	1500	1000
	48	40	5.00	5.30	2.80	3.10	150	20	1900	1170
	60	50	4.50	4.80	2.40	2.70	90	15	2200	1300

MEDIUM TYPE	OUTER DIAMETER	NOMINAL DIAMETER	WALL THICKNESS AT ENDS (mm)		WALL THICKNESS AT BARELL (mm)		MAX. RECOMMENDED INSTALLATION DEPTH in metre	NO. OF PIPES PER BUNDLE	ULTIMATE BREAKING LOAD in kg	SAFE PULLING LOAD WITH CHAIN PULLEY in kg
	mm	mm	Min	Max	Min	Max				
	33	25	4.20	4.50	2.00	2.30	210	25	1250	720
	42	32	5.10	5.40	3.10	3.40	210	25	2000	1150
	48	40	5.50	5.80	3.30	3.60	210	20	2300	1250
	60	50	5.30	5.60	2.80	3.10	130	15	2700	1450

STANDARD TYPE	OUTER DIAMETER	NOMINAL DIAMETER	WALL THICKNESS AT ENDS (mm)		WALL THICKNESS AT BARELL (mm)		MAX. RECOMMENDED INSTALLATION DEPTH in metre	NO. OF PIPES PER BUNDLE	ULTIMATE BREAKING LOAD in kg	SAFE PULLING LOAD WITH CHAIN PULLEY in kg
	mm	mm	Min	Max	Min	Max				
	33	25	5.40	5.70	3.30	3.60	300	25	1550	1100
	42	32	5.70	6.00	3.50	3.80	260	25	2200	1380
	48	40	6.30	6.60	4.00	4.30	260	20	2700	1500
	60	50	6.50	6.80	4.00	4.30	200	15	3500	1950

## PUMP DELIVERY PRESSURE

Pump delivery pressure is the maximum delivery head of the pump. In the pump performance curves the value of head at which the flow becomes nil (zero), is the max. head in metres. Hence the max. head of the pump must not exceed the recommended permissible hydrostatic pressure of the pipes published in the following table.

OUTER DIAMETER	NOMINAL DIAMETER	Permissible Hydrostatic Pressure (kg/cm <sup>2</sup> )								
		ESPY	ELITE	MEDIUM	MEDIUM PLUS	STAND-ARD	HEAVY	HEAVY PLUS	SUPER HEAVY	SUPER HEAVY PLUS
mm	mm									
33	25	12.5	15	21	-	30	-	-	-	-
42	32	12.5	15	21	-	26	35	-	40	45
48	40	12.5	15	21	-	26	35	-	-	-
60	50	-	9	13	17	20	27	-	35	-
63	50	-	-	-	-	-	-	30	-	-
75	65	-	-	10	-	16	26	-	35	-
88	80	-	-	11	-	17	26	-	35	-
113	100	-	-	10	-	15	26	-	35	-
140	125	-	-	-	-	16	26	-	35	-

\* Installation depth depends on recommended permissible hydrostatic pressure rating of the pipes and refer pump delivery pressure chart for more details.

# UPVC COLUMN PIPES - 6 mtr (20 Ft)

## Coupler & Bell Mouth Type

These pipes are available in 33, 42, 48, 60, 75, 88 and 113 mm sizes of outer diameter under ESPY, Elite, Medium, Standard, Heavy and Super Heavy types. The Maximum Working Head for Coupler type is upto 450 mtrs and for Bell Mouth upto 150 mtrs.

Redefining  
heights  
**6** mtr (20ft)  
C.R.I. Column Pipes



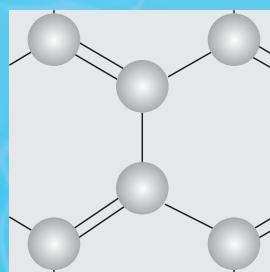
## C.R.I. uPVC COLUMN PIPES - COUPLER TYPE 6mtr (20ft)

PIPE TYPE	OUTER DIAMETER mm	NOMINAL DIAMETER mm	MAX. RECOMMENDED INSTALLATION DEPTH in metre	NO. OF PIPES PER BUNDLE (6 metre)	ULTIMATE BREAKING LOAD in kg	SAFE PULLING LOAD WITH CHAIN PULLEY in kg
ESPY	33	25	125	25	700	500
ESPY	42	32	125	20	1100	800
ESPY	60	50	70	10	1500	1100
ELITE	42	32	150	15	1500	1100
ELITE	60	50	90	10	2200	1500
MEDIUM	60	50	130	10	2800	2000
MEDIUM	88	80	110	6	4000	2800
MEDIUM	113	100	100	4	6500	4600
STANDARD	60	50	200	6	3600	2500
STANDARD	88	80	170	4	7000	4900
STANDARD	113	100	150	3	10000	7000
HEAVY	88	80	260	4	9000	6300
HEAVY	113	100	260	3	13000	9500
SUPER HEAVY	60	50	350	5	5300	3800
SUPER HEAVY PLUS	42	32	450	8	3200	2300

## C.R.I. uPVC COLUMN PIPES - BELLMOUTH TYPE 6mtr (20ft)

PIPE TYPE	OUTER DIAMETER mm	NOMINAL DIAMETER mm	MAX. RECOMMENDED INSTALLATION DEPTH in metre	NO. OF PIPES PER BUNDLE (6 metre)	ULTIMATE BREAKING LOAD in kg	SAFE PULLING LOAD WITH CHAIN PULLEY in kg
ESPY	33	25	125	25	700	500
ESPY	42	32	125	20	1000	700
ELITE	42	32	150	15	1200	800

## BI-AXIAL ORIENTATION



Bi-axial orientation during column pipe extrusion

Specially designed Bi-axial design tool in column extrusion process ensures the PVC molecular chain gets linear & diametrically oriented by which gives higher drop impact and notch impact strength to the pipes.

# HDPE PIPES - HIGH DENSITY POLYETHYLENE

**PE 63, PE 80 & PE 100 for potable water supply, agri & sprinkler irrigation**

HDPE pipes are manufactured as per IS 4984:2016 standard available in 20mm to 630mm sizes in different pressure classes are used to carry potable water in domestic, rural & agriculture pipe lines. These pipes are available in PN2.5 to PN16 pressure class in PE63, PE80, and PE100 grade and are manufactured according to Indian standards.

## FEATURES

- Non-Toxic & Hygienic
- Corrosion resistance
- Maintenance free
- Strong, Flexible & Light weight
- Smooth surface



STANDARD LENGTH FOR VARIOUS SIZES	Sizes in mm (OD)		PN-Kgf/cm <sup>2</sup>		Length per roll	
	20, 25, 32, 40 & 50		6kg, 8kg, & 10kg		300mtr to 1000mtr	
	63 & 75		4kg, 6kg, 8kg & 10kg		200mtr to 500mtr	
	90		4kg, 6kg, 8kg & 10kg		100mtr to 200mtr	
	110		4kg, 6kg, 8kg & 10kg		6mtr & 100mtr	

## TECHNICAL DETAILS

Dimensions and pressure rating chart for HDPE Pipes PE63 as per IS 4984:2016

Nominal Outside Diameter (Nominal Size)	(SDR 41) PN 2		(SDR 33) PN 2.5		(SDR 26) PN 3.2		(SDR 21) PN 4		(SDR 17) PN 5		(SDR 13.6) PN 6		(SDR 11) PN 8	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
20	-	-	-	-	-	-	-	-	-	-	-	-	1.9	2.2
25	-	-	-	-	-	-	-	-	-	-	1.9	2.2	2.3	2.6
32	-	-	-	-	-	-	-	-	1.9	2.2	2.4	2.7	2.9	3.3
40	-	-	-	-	-	-	1.9	2.2	2.4	2.7	3.0	3.4	3.7	4.2
50	-	-	-	-	2.0	2.3	2.4	2.7	3.0	3.4	3.7	4.2	4.6	5.2
63	-	-	-	-	2.5	2.9	3.0	3.4	3.7	4.2	4.7	5.3	5.8	6.5
75	1.9	2.2	2.3	2.6	2.9	3.3	3.6	4.1	4.5	5.1	5.6	6.3	6.9	7.7
90	2.2	2.5	2.8	3.2	3.5	4.0	4.3	4.8	5.3	5.9	6.7	7.5	8.2	9.1
110	2.7	3.1	3.4	3.8	4.3	4.8	5.3	6.0	6.5	7.3	8.1	9.0	10.0	11.1
125	3.1	3.5	3.8	4.3	4.8	5.4	6.0	6.7	7.4	8.2	9.2	10.2	11.4	12.7
140	3.5	4.0	4.3	4.8	5.4	6.0	6.7	7.5	8.3	9.2	10.3	11.4	12.8	14.2
160	3.9	4.4	4.9	5.5	6.2	6.9	7.7	8.6	9.5	10.6	11.8	13.1	14.6	16.2
180	4.4	4.9	5.5	6.2	7.0	7.8	8.6	9.6	10.6	11.8	13.3	14.7	16.4	18.1
200	4.9	5.5	6.1	6.8	7.7	8.6	9.6	10.7	11.8	13.1	14.7	16.3	18.2	20.1
225	5.5	6.2	6.9	7.4	8.7	9.7	10.8	12.0	13.3	14.7	16.6	18.4	20.5	22.7
250	6.1	6.8	7.6	8.5	9.7	10.8	12.0	13.3	14.7	16.3	18.4	20.3	22.8	25.2
280	6.9	7.7	8.5	9.5	10.8	12.0	13.4	14.8	16.5	18.3	20.6	22.8	25.5	28.2
315	7.7	8.6	9.6	10.7	12.2	13.5	15.0	16.6	18.6	20.6	23.2	25.6	28.7	31.7
355	8.7	9.7	10.8	12.0	13.7	15.2	16.9	18.7	20.9	23.1	26.1	28.8	32.2	35.6
400	9.8	10.9	12.2	13.5	15.4	17.0	19.1	21.1	23.6	26.1	29.5	32.6	36.4	40.1
450	11.0	12.2	13.7	15.2	17.3	19.1	21.5	23.8	26.5	29.3	33.1	36.5	40.9	45.1
500	12.2	13.5	15.2	16.8	19.3	21.3	23.9	26.4	29.5	32.6	36.8	40.6	45.5	50.2
560	13.7	15.2	17.0	18.8	21.6	23.9	26.7	29.5	33.0	36.4	41.2	45.4	50.9	56.1
630	15.4	17.0	19.1	21.1	24.3	26.8	30.0	33.1	37.1	40.9	46.4	51.1	57.3	63.1

Note : Pressure Rating in : kg/cm<sup>2</sup> (10m = 1kg/cm<sup>2</sup>)

## TECHNICAL DETAILS

**Dimensions and pressure rating chart for HDPE Pipes PE80 as per IS 4984:2016**

Nominal Outside Diameter (Nominal Size)	(SDR 41) PN 2.5		(SDR 33) PN 3.2		(SDR 26) PN 4		(SDR 21) PN 5		(SDR 17) PN 6	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
20	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-
32	-	-	-	-	-	-	-	-	1.90	2.20
40	-	-	-	-	-	-	1.90	2.20	2.40	2.70
50	-	-	-	-	2.00	2.30	2.40	2.70	3.00	3.40
63	-	-	-	-	2.50	2.90	3.00	3.40	3.70	4.20
75	1.90	2.20	2.30	2.60	2.90	3.30	3.60	4.10	4.50	5.10
90	2.20	2.50	2.80	3.20	3.50	4.00	4.30	4.80	5.30	5.90
110	2.70	3.10	3.40	3.80	4.30	4.80	5.30	6.00	6.50	7.30
125	3.10	3.50	3.80	4.30	4.80	5.40	6.00	6.70	7.40	8.20
140	3.50	4.00	4.30	4.80	5.40	6.00	6.70	7.50	8.30	9.20
160	3.90	4.40	4.90	5.50	6.20	6.90	7.70	8.60	9.50	10.60
180	4.40	4.90	5.50	6.20	7.00	7.80	8.60	9.60	10.60	11.80
200	4.90	5.50	6.10	6.80	7.70	8.60	9.60	10.70	11.80	13.10
225	5.50	6.20	6.90	7.70	8.70	9.70	10.80	12.00	13.30	14.70
250	6.10	6.80	7.60	8.50	9.70	10.80	12.00	13.30	14.70	16.30
280	6.90	7.70	8.50	9.50	10.80	12.00	13.40	14.80	16.50	18.30
315	7.70	8.60	9.60	10.70	12.20	13.50	15.00	16.60	18.60	20.60
355	8.70	9.70	10.80	12.00	13.70	15.20	16.90	18.70	20.90	23.10
400	9.80	10.90	12.20	13.50	15.40	17.00	19.10	21.10	23.60	26.10
450	11.00	12.20	13.70	15.20	17.30	19.10	21.50	23.80	26.50	29.30
500	12.20	13.50	15.20	16.80	19.30	21.30	23.90	26.40	29.50	32.60
560	13.70	15.20	17.00	18.80	21.60	23.90	26.70	29.50	33.00	36.40
630	15.40	17.00	19.10	21.10	24.30	26.80	30.00	33.10	37.10	40.90

**Note : Pressure Rating in : kg/cm<sup>2</sup> (10m = 1kg/cm<sup>2</sup>)**

## TECHNICAL DETAILS

**Dimensions and pressure rating chart for HDPE Pipes PE100 as per IS 4984:2016**

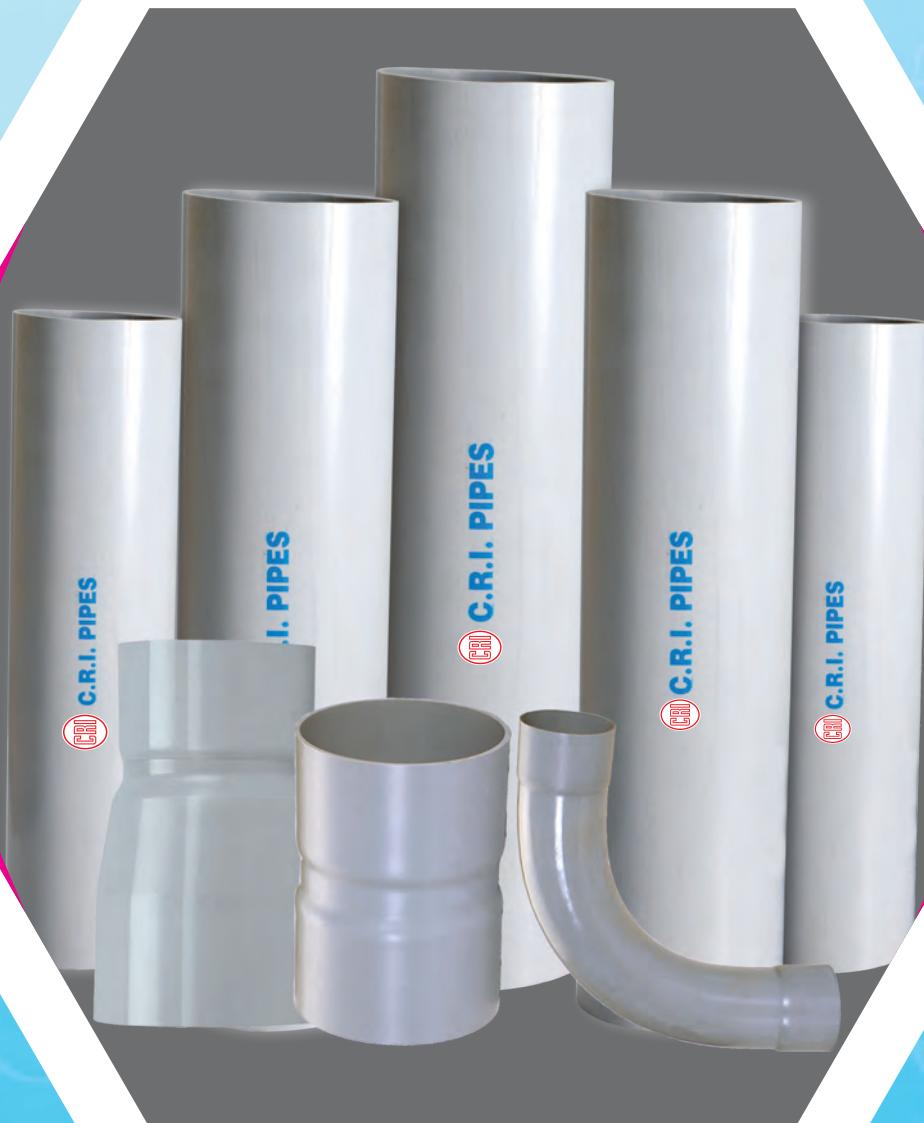
Nominal Outside Diameter (Nominal Size)	(SDR 21) PN 6		(SDR 17) PN 8		(SDR 13.6) PN 10		(SDR 11) PN 12.5		(SDR 9) PN 16	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
20	-	-	-	-	-	-	1.90	2.20	2.30	2.60
25	-	-	-	-	1.90	2.20	2.30	2.60	2.80	3.20
32	-	-	1.90	2.20	2.40	2.70	2.90	3.30	3.60	4.10
40	1.90	2.20	2.40	2.70	3.00	3.40	3.70	4.20	4.50	5.10
50	2.40	2.70	3.00	3.40	3.70	4.20	4.60	5.20	5.60	6.30
63	3.00	3.40	3.70	4.20	4.70	5.30	5.80	6.50	7.00	7.80
75	3.60	4.10	4.50	5.10	5.60	6.30	6.90	7.70	8.40	9.30
90	4.30	4.80	5.30	5.90	6.70	7.50	8.20	9.10	10.00	11.10
110	5.30	6.00	6.50	7.30	8.10	9.00	10.00	11.10	12.30	13.60
125	6.00	6.70	7.40	8.20	9.20	10.20	11.40	12.70	13.90	15.40
140	6.70	7.50	8.30	9.20	10.30	11.40	12.80	14.20	15.60	17.30
160	7.70	8.60	9.50	10.60	11.80	13.10	14.60	16.20	17.80	19.70
180	8.60	9.60	10.60	11.80	13.30	14.70	16.40	18.10	20.00	22.10
200	9.60	10.70	11.80	13.10	14.70	16.30	18.20	20.10	22.30	24.60
225	10.80	12.00	13.30	14.70	16.60	18.40	20.50	22.70	25.00	27.60
250	12.00	13.30	14.70	16.30	18.40	20.30	22.80	25.20	27.80	30.70
280	13.40	14.80	16.50	18.30	20.60	22.80	25.50	28.20	31.20	34.40
315	15.00	16.60	18.60	20.60	23.20	25.60	28.70	31.70	35.00	38.60
355	16.90	18.70	20.90	23.10	26.10	28.80	32.30	35.60	39.50	43.60
400	19.10	21.10	23.60	26.10	29.50	32.60	36.40	40.10	44.50	49.10
450	21.50	23.80	26.50	29.30	33.10	36.50	40.90	45.10	50.00	55.10
500	23.90	26.40	29.50	32.60	36.80	40.60	45.50	50.20	55.60	61.30
560	26.70	29.50	33.00	36.40	41.20	45.40	50.90	56.10	62.30	68.60
630	30.00	33.10	37.10	40.90	46.40	51.10	57.30	63.10	70.00	77.10

**Note : Pressure Rating in : kg/cm<sup>2</sup> (10m = 1kg/cm<sup>2</sup>)**  
**(Pressure Ration available from PN 3 to PN 20)**

# uPVC PRESSURE PIPES & FITTINGS

## For potable water supply & Irrigation

uPVC pressure pipes are manufactured as per IS4985:2000 standard available in 20mm to 400mm sizes in different pressure class. Pipes in solvent cement type and rubber seal type available with varieties of moulded fittings and wide range of fabricated fittings. Moulded fittings are manufactured as per IS 7834 and fabricated fittings are manufactured as per IS 10124 standards. These pipes and fittings are used for variety of applications like, agriculture, Irrigation, water supply, Industrial process lines, swimming pools and fire fighting mains etc.,



## FEATURES

- **Non-Toxic and Hygienic** - These pipes are most ideal for carrying potable water.
- **Corrosion resistance** - These pipes are not affected by chemical, electrolytic and galvanic action, hence free from corrosion.
- **Smooth surface** - Pipes are having mirror smooth inner surface and hence better flow characteristics in comparison to AC, CI & GI pipes.
- **Fire resistance** - C.R.I. uPVC pressure pipes are fire resistant and self-extinguishing.
- **Maintenance free** - These pipes & fittings are free from corrosion, rust, weathering & leakage and ensures years of trouble free performance.
- **Strong & Light Weight** - The pipes are light in weight for easy handling and have good mechanical strength & toughness.
- **Longer Life** - The system is free from weaknesses caused by rusting, weathering and chemical action, and hence lasts for a lifetime.

## TECHNICAL DETAILS

Dimensions of uPVC pressure pipes as per IS 4985:2000

Nominal Outside Diameter (Nominal Size)	Mean Outside Diameter		WALL THICKNESS													
			Class 1 0.25 MPa		Class 2 0.4 MPa		Class 3 0.6 MPa		Class 4 0.8 MPa		Class 5 1.0 MPa		Class 6 1.25 MPa		Plumbing Pipes	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
20	20.0	20.3	-	-	-	-	-	-	-	-	1.1	1.5	1.4	1.8	2.8	3.3
25	25.0	25.3	-	-	-	-	-	-	1.2	1.6	1.4	1.8	1.7	2.1	2.9	3.4
32	32.0	32.3	-	-	-	-	-	-	1.5	1.9	1.8	2.2	2.2	2.7	3.4	3.9
40	40.0	40.3	-	-	-	-	1.4	1.8	1.8	2.2	2.2	2.7	2.8	3.3	3.6	4.2
50	50.0	50.3	-	-	-	-	1.7	2.1	2.3	2.8	2.8	3.3	3.4	4.0	3.7	4.3
63	63.0	63.3	-	-	1.5	1.9	2.2	2.7	2.8	3.3	3.5	4.1	4.3	5.0	-	-
75	75.0	75.3	-	-	1.8	2.2	2.6	3.1	3.4	4.0	4.2	4.9	5.1	5.9	-	-
90	90.0	90.3	1.3	1.7	2.1	2.6	3.1	3.7	4.0	4.6	5.0	5.7	6.1	7.1	-	-
110	110.0	110.4	1.6	2.0	2.5	3.0	3.7	4.3	4.9	5.6	6.1	7.1	7.5	8.7	-	-
125	125.0	125.4	1.8	2.2	2.9	3.4	4.3	5.0	5.6	6.4	6.9	8.0	8.5	9.8	-	-
140	140.0	140.5	2.0	2.4	3.2	3.8	4.8	5.5	6.3	7.3	7.7	8.9	9.5	11.0	-	-
160	160.0	160.5	2.3	2.8	3.7	4.3	5.4	6.2	7.2	8.3	8.8	10.2	10.9	12.6	-	-
180	180.0	180.6	2.6	3.1	4.2	4.9	6.1	7.1	8.0	9.2	9.9	11.4	12.2	14.1	-	-
200	200.0	200.6	2.9	3.4	4.6	5.3	6.8	7.9	8.9	10.3	11.0	12.7	13.6	15.7	-	-
225	225.0	225.7	3.3	3.9	5.2	6.0	7.6	8.8	10.0	11.5	12.4	14.3	15.3	17.6	-	-
250	250.0	250.8	3.6	4.2	5.7	6.5	8.5	9.8	11.2	12.9	13.8	15.9	17.0	19.6	-	-
280	280.0	280.9	4.1	4.8	6.4	7.4	9.5	11.0	12.5	14.4	15.4	17.8	19.0	21.9	-	-
315	315.0	316.0	4.6	5.3	7.2	8.3	10.7	12.4	14.0	16.1	17.3	19.9	21.4	24.7	-	-
355	355.0	356.1	5.1	5.9	8.1	9.4	12.0	13.8	15.8	18.2	19.6	22.6	24.1	27.8	-	-
400	400.0	401.2	5.8	6.7	9.1	10.5	13.5	15.6	17.8	20.5	22.0	25.3	27.2	31.3	-	-

Note : The wall thickness of pipe is based on a safe working stress of 8.6 MPa at 27°C. The working pressure gets reduced at sustained higher temperatures. Occasional rise in temperature, as in summer, with concurrent corresponding reduction in temperature during nights has no deleterious effect on the working pressure of the pipes considering the total life of pipe.



## RINGFIX UPVC PRESSURE PIPES WITH SEALING RING

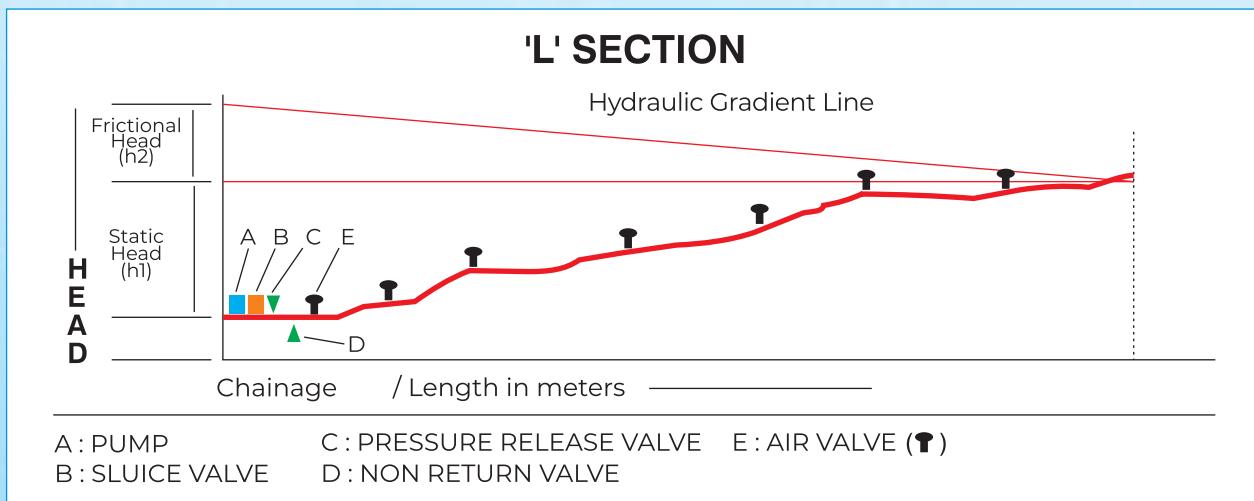
Ringfix uPVC Pressure Pipes are specially designed for higher dia-meter requirements and wash out the need of solvent cement. The sealing ring ensures leak-proof joints and easy installation. The entire range of Ringfix uPVC pressure pipes are available from 63 mm to 400 mm diameter, in 4, 6, 8 and 10 kgf/cm<sup>2</sup> working pressure classes.

### ADVANTAGES

- Even in extreme temperature variations the rubber ring absorbs the linear expansion and contraction leaving the seal intact.
- Deflection of pipes due to various reasons like shifting of soil, land contour can be easily accommodated upto 2° per joint.
- Easy, convenient installation.
- No need for solvent cement.

### BASIC PARAMETER REQUIRED

- **Discharge Required (Q) (lps)** : This is the amount of water required for irrigating the fields and can be obtained by planning the crop pattern and frequency of irrigation.
- **Length of the pipeline (L) (meters)** : This is the total length of the pipe required from the source of water to the discharge point as shown in the 'L' Section.
- **Static Head (h1) (meters)** : This is the level difference between the lowest and highest level of the pipelines as shown in the 'L' Section.



### Selection of Pressure Class:

For selection of pressure class of a pipeline, total head acting on the pipe at the particular point needs to be worked out as under:

Total Head (H) = h<sub>1</sub> + h<sub>2</sub> + 10% of (h<sub>1</sub>+h<sub>2</sub>). 10% of (h<sub>1</sub>+h<sub>2</sub>) is taken for losses in valves and fittings.

### HANDLING INSTRUCTION:

- Pipes should be kept on an even surface while storing. They should be properly supported and should not be stacked for heights more than 1.5m for longer duration.
- While laying big pipelines provision should be made for expansion joints, air vents and proper anchorage.
- Pipes or fittings should not be cleaned with solvent cement. 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 (6Kgf/cm<sup>2</sup> and above) always use heavy duty solvent cement. Very old, hard, semi-fluid solvent cement should not be used.

### FRICITION LOSS CALCULATION

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

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

Where,

hf - Heads loss in m

L - Length of pipe section in m

Q - Discharge in litres/sec

D - Internal diameter of pipe in mm

C - Hazen William constant 150 (For design purpose consider 140)

### CONSUMPTION OF SOLVENT CEMENT

Diameter of pipe (mm)	20	25	32	40	50	63	75	90	110	125	140	160	180	200	225	250	280	315	355	400
Approx. no. of joints which can be made per liter of solvent cement	354	270	225	180	130	125	103	79	54	36	27	25	15	12	9	7	5	3	2	2

## uPVC WELL CASING AND SCREEN PIPES

uPVC Well Casing and Screen pipes are manufactured as per IS 12818:2010 standard available in 40mm to 300mm sizes in different types. These pipes are an ideal products for protection of domestic, irrigation, industrial and mining borewells, keeping out the gravel pack and foreign particles providing clean and clear water from the borewells.



## FEATURES AND BENIFITS

- **Chemical properties** – Non corrosive, ensures longer life cycle.
- **Physical properties** – Lighter in weight than conventional metal pipes, easy handling, transportation and installation.
- **Economical** – Lesser in cost than other alternates, cost of transportation, handling and installation is lesser, being lighter in weight no cranes, welding machines or diesel genset are required for installation.
- **Longer life** – Life cycle more than 30 years, saves replacement and replenishment costs.
- **Anti corrosive & Non-conductive** – Excellent life avoiding electro chemical reactions.
- **Ensuring water quality** – uPVC doesn't impart any colour, odour or taste.
- **Stiffness and strength** – Excellent mechanical properties thus is capable of withstanding the hydraulic pressure the pipes are subjected to during construction of well.
- **Convenient and reliable** – Provides easy and stronger joints.

C.R.I. uPVC Casing pipes have traphezoidal threads which provides easy and strong joints.

uPVC Screen pipes facilitate optimum performance & safety by keeping the gravel pack & other foreign substances out of the well

uPVC Screen pipes has horizontal slots which enables laminar flow into the well ensuring higher permeability & reducing well entrance

## TECHNICAL DETAILS

**Dimension of 'CS' casing pipes - for Bore Well Depth upto 80 meters**

NOMINAL DIAMETER DN	MEAN OUTSIDE DIAMETER OF PIPE		OUTSIDE DIAMETER OF PIPE AT ANY POINT		MEAN OUTSIDE DIAMETER OVER CONNECTION	WALL THICKNESS	
	Min.	Max.	Min.	Max.		Min.	Max.
150	165.00	165.40	164.80	165.60	174.00	5.70	6.50
175	200.00	200.50	199.80	200.60	211.00	7.00	7.80
200	225.00	225.50	224.80	225.80	238.00	7.60	8.80
250	280.00	280.50	279.60	280.80	292.00	9.60	11.00

Note : In addition to the above range we also offer 125CS, 180CS & 225CS plain and any other casing pipe as per specific requirements.

**Dimensions of 'CM' Casing Pipes - for Bore Well Depth between 80-250 Meters**

NOMINAL DIAMETER DN	MEAN OUTSIDE DIAMETER OF PIPE		OUTSIDE DIAMETER OF PIPE AT ANY POINT		MEAN OUTSIDE DIAMETER OVER CONNECTION	WALL THICKNESS	
	Min.	Max.	Min.	Max.		Max.	Min.
40	48.00	48.20	48.00	48.30	52.00	3.50	4.00
50	60.00	60.20	59.90	60.30	65.00	4.00	4.60
80	88.00	88.30	88.00	88.40	94.00	4.00	4.60
100	113.00	113.30	112.90	113.40	120.00	5.00	5.70
125	140.00	140.40	139.90	140.50	150.00	6.50	7.30
150	165.00	165.40	164.80	165.60	178.00	7.50	8.50
175	200.00	200.50	199.80	200.60	215.00	8.80	9.80
200	225.00	225.50	224.80	225.80	243.00	10.00	11.20
250	280.00	280.50	279.60	280.80	298.00	12.50	14.00

Note : In addition to the above range we also offer 113CM,180CM,213CM & 225CM plain and any other casing pipe as per specific requirements.

**Dimensions of 'CD' Casing Pipes - for Bore Well Depth between 250-400 Meters**

NOMINAL DIAMETER DN	MEAN OUTSIDE DIAMETER OF PIPE		OUTSIDE DIAMETER OF PIPE AT ANY POINT		MEAN OUTSIDE DIAMETER OVER CONNECTION	WALL THICKNESS	
	Min.	Max.	Min.	Max.		Max.	Min.
100	113	113.30	112.8	113.4	125	7	7.9
115	125	125.3	124.9	125.4	137	7.5	8.5
125	140	140.4	139.7	140.5	152	8	9
150	165	165.4	164.6	165.6	180	9.5	10.7
175	200	200.5	199.6	200.6	217	11.8	13.6
200	225	225.5	224.5	225.8	247	13	14.8
250	280	280.5	279.4	280.8	304	16	17.6
300	330	330.6	329.3	331	359	19	21

**TECHNICAL DETAILS****Dimensions of Screen Pipes with RIBS**

NOMINAL DIAMETER DN	MEAN OUTSIDE DIAMETER OF PIPE		OUTSIDE DIAMETER OF PIPE AT ANY POINT		MEAN OUTSIDE DIAMETER OVER CONNECTION	WALL THICKNESS	
	Min.	Max.	Max.	Max.		Min.	Max.
40	52.00		51.90		56.00	3.50	4.00
50	64.00		63.90		69.00	4.00	4.60
80	92.00		91.80		98.00	4.00	4.60
100	117.00		116.80		124.00	5.00	5.70
150	168.00		168.60		182.00	7.50	8.50
200	229.00		228.50		247.00	10.00	11.20

# NOTES

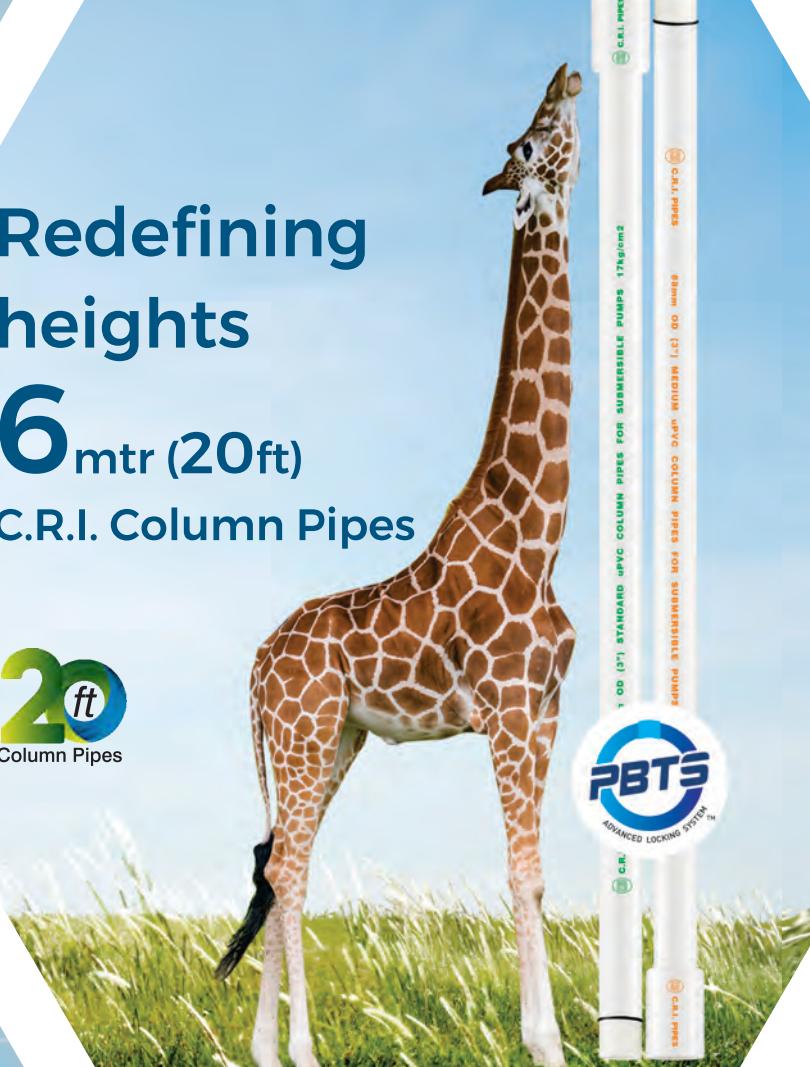
# NOTES

## NOTES

# Redefining heights

## 6 mtr (20ft)

### C.R.I. Column Pipes



# C.R.I. PIPES



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