

Characteristics of Various plastic, DI and GI pipes

S. No.	Attributes	uPVC Pipes	HDPE Pipes	DI Pipes	GI Pipe
1	Type of Pipe	Rigid	Flexible	Rigid	Rigid
2	Applicable IS: Code, if any	4985-2000	4984-1995	8329-2000	11722-19896
3	Available Length	6m or 12m	6m or 12m rolls up to 15mm	5.5m or 6m	6m
4	Diameters available	20mm to 630mm (OD)	20mm to 1000mm (OD)	100mm to 2000mm	20mm to 300mm
5	Class of Pipes Available		PN2.5, PN4, PN6, PN10	K7, K8, K9, K10, K12	A, B, C
6	Pressure Ratings (Kg/cm ²)	6, 8, 10, 12	2.55 to 16.3	12.2 to 51 depending on dia. & Class (hydro static test pressure at works)	Class-B: 30 at test and 20 at working; Class-C: 50 at test and 30 at working
7	Hydraulic Efficiency (Hazen's Roughness Coefficient)	145	145	140	100
8	Type of Joint	Collar and S&S Joints	Butt fusion welded	Flexible rubber-push on type joint / flange joint	Coupling with rubber ring / Socketed
9	Jointing process	Easy & Fast	Slower	S&S is fast but slower than PVC	S&S is fast but slower than PVC
10	Bedding Requirement	Sand bedding is required to avoid deflection of pipe	Excavated material can be refilled after removal of hard sharp edge material	Excavated material can be refilled after removal of hard sharp edge material	Excavated material can be refilled after removal of hard sharp edge material
11	Requirement of special equipment for laying and jointing	Not required	Requires sophisticated moulding equipment for butt fusion	Not required	Not required

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12	Requirement of Special	Required	Can be bent up to 25 times the dia of pipe. Many bends can be eliminated	Required	Required
13	Leakage through joint	Negligible if properly jointed	Least chances of leakage	Negligible if properly jointed	Negligible if properly jointed
14	Flexibility of joints	Limits	Maximum	Can take up to 3 degrees of deflection	Can take up to 2.5 degree of deflection
15	Requirement of skilled labour for laying and jointing	Required	Required	Required	Required
16	Weight/Handling	Light/Easy	Light/Easy	Heavy/Difficult	Light/Easy
17	Corrosion resistance	Highly corrosion resistant	Highly corrosion resistant	corrosion resistant	Susceptible to corrosion in long run
18	Increased risk of corrosion on cuts (Yes/No)	No	No	Yes	Yes
19	Lining/coating used (Yes/No)	No	No	Yes	Yes
20	Damage to lining on deflection of pipe (Yes/No)	Not Applicable	Not Applicable	Yes	No
21	Damage to lining on drilling/cutting (Yes/No)	Not Applicable	Not Applicable	Yes	Yes
22	Life (Years)	>50	>50	70	30

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23	Storage Requirement	To be stored under covered space. Pipe becomes brittle if exposed to Sun for long	Can be stored anywhere	Can be stored anywhere	Can be stored anywhere
24	Cost	Cheapest	Costlier than uPVC	Costliest	Costlier than uPVC or HDPE cheaper than GRP, DI
25	Effect of radiation	Becomes brittle if exposed to sunlight	Negligible	Lining may be affected	No effect
26	Suitability of pipe in earthquake prone areas	Not suited	Most suitable	Lining may be affected	No affect
27	Suitability of joint in earthquake prone areas	Joints can give way under tension	Most suitable	Lining may be affected	Suited
28	Suitability in surge	More than in HDPE	Least (much less than in rigid pipes)	Much higher than in HDPE because of rigidity	Much higher than in HDPE because of rigidity
29	Requirement of thrust block on Bends	Required because of low strength in joints	Not required (joint strength equal to or more than the pipe strength)	Required because of low strength of joints	Required because of low strength of joints