Characteristics of various Metallic, PSC & GRP Pipes

Material / Parameters	Cast Iron	Ductile Iron	Mild Steel	PSC	PCCP	GRP	BWSC
Tensile Strength (Mpa)	150-260	Min.420	Min.410	Less Hoop tensile strength	410	High Hoop tensile strength	410
Elongation %	Nil	10	17	-	-	-	-
Brinell Hardness	< 230 BHN	< 230 BHN	< 140 BHN	-	-	-	-
Type	This is heavy, **rigid** & brittle pipe.	The pipe ductile, lighter **flexible** in nature.	This is also a light, **flexible** type pipe.	High weight, **Rigid** pipe	High weight, **Rigid** pipe	Very light weight, **Flexible**	High Weight, **semi-rigid** pipe
Strength	High strength, very low impact resistance	High strength and very high impact resistance	High strength and high impact resistance	Subject to shear & beam breakage	Subject to shear & beam breakage	High strength to weight Ratio	Subject to shear & beam breakage
Corrosion	Corrosion resistant	Corrosion resistant	Highly corrosion prone.	Highly corrosion prone	Highly corrosion prone	Highly Corrosion resistant	Highly corrosion prone
Cement Mortar Lining	Not available	centrifugally applied cement mortar lining	Cement mortar lining is available at site level	Lining & coating	Lining & coating	Not applicable	CML applicable
Laying & Jointing Type & Installation	Long laying, Flexible rubber push-on type joints and rigid lead, slow installation	Long Laying, Flexible rubber-push-on type joints (Gasket type), fast installation	Long Laying, Rigid welded joints, Fast installation	Wide range of laying length, flexible Rubber ring (Gasket type), slow installation	Wide range of laying length, welding, slow installation	Long laying length (6-18m), double bell coupling, Faster installation	Medium laying length (4-8m), welding, slow installation
Effective service life & durability	Minimum 100 years	Minimum 100 years	30 to 40 years under proper anticorrosive lining	Max.30 Years under proper Maintenance	Max. 30 Years under proper Maintenance	50-60 Years	Max.30 Years under proper Maintenance
Basic cost of pipe	Costliest	Costlier	Costly	Cheaper	Cheap	Cost effective	Relatively less Costly
Transportation cost	Higher	High	High	Higher	Higher	Less	High
Roughness coefficient	0.011 with CML	0.011 with CML	0.011 with CML	0.011 with CML	0.011 with CML	0.011	0.011 with CML
HW-"C"- Value	140 with CML	140 with CML	120 with CML	140	140	150	130
Handling	Easy	Easier	Easy	Difficult	Difficult	Easier	Easy
Deflection	3^o-5^o	3^o-5^o	NIL	negligible	negligible	About 5^o	Nil
Surge Pressure	High hydraulic surge	Medium hydraulic surge	Medium hydraulic surge	High hydraulic surge	High hydraulic surge	Low hydraulic surge	High hydraulic surge
Available Sizes in India (mm)	100-1000	100-1100	300-2500	300-2000	300-2000	300-2500	250-1800
Standards	IS-1536	IS-8329	IS-3589	IS-784	IS-784/EN-642	IS-12709	IS-15155
Manufacturer	Kesoram/Electrosteel	Electro steel/Jindal Saw	PSL/SAIL/Welspun/Jindal Saw	IHP/Bhooratnam/Aqua Prestress	IHP	Graphite India, Amiantit	IHP
O&M	Low	Low	Low	Medium	Medium	Low	Medium