

TECHNICAL COMPARISON of PRIME PP-R Pipes with CPVC Pipes

Property	CPVC	PP-R
Impact Strength	1.0 - 5.6	1.1 - 14.0
Vicat Softening Temp., °C	110	130
Maximum Safe Working Temp., °C	85	95
Friction Factor	Low	Very Low
Water Absorption (%) Maximum	0.15	0.03
Specific Gravity gms/cm ³	1.49 - 1.58	0.9
Chemical resistance	Average	Very high
Jointing		
Method	Special Solvent Cement	Simple Heat Fusion
Skill	needs special attention & skilled Labour	Very simple & can be done by unskilled labour
Strength	Surface Homogeneity	Thorough Homogeneity
Time	Few Minutes	Few seconds
Line Commissioning	24 Hours	Immediate
Hygienic Property	Average	Very Good
Service Life - years	30-40	More than 50 years
Reliability	Good	Very Good

Mechanical Properties

Properties	Test Method	Unit	Value
Strength at flow limit at 23°C Speed of pulling: 50 mm/minute 100 mm/minute	ISO R527	Kgs/cm ²	220
		Kgs/cm ²	230
Extension at flow limit at 23°C Speed of pulling: 50 mm/minute 100 mm/minute	DIN 53 455	%	17
		%	18
Break strength at 23°C Speed of pulling: 50 mm/minute 100 mm/minute	ASTM D 638	Kgs/cm ²	350
		Kgs/cm ²	340
Extension of break out at 23°C Speed of pulling: 50 mm/minute 100 mm/minute		%	>500
		%	>500
Elasticity module at 23°C	ASTM D 790	Kgs/cm ²	8500
Bend module at 23°C	DIN 53 447	N/mm ²	185
Shore D hardness	ASTM D 740 ISO R 868, DIN 53 505	R - Scale	65
IZOD impact strength (notched) at 23°C at 0°C at -10°C	ISO R 180 ASTM D 256	Kgs/cm ²	No break
		Kgs/cm ²	8
		Kgs/cm ²	3
CHARPY impact strength (notched) at 23°C at 0°C	DIN 53 453 ISO R 179	kJ/m ² kJ/m ²	15 35
CHARPY impact strength (unnotched) at 23°C at 0°C	DIN 53 453 ISO R 179	kJ/m ² kJ/m ²	No break
impact strength, at 0°C	DIN 8078 Part 2		No break
Tensile Strength --- Yield Point --- Break Point	ASTM D638	Kgs/cm ²	270
			230

PROPERTIES OF PRIME PP-R PIPES

Physical Properties

Property	Test Method	Unit	Value
Density	ASTM D792	g/cm ³	0.91
Melt Flw Index 190 C / 5 Kg	ASTM D1238	g/10 minutes	0.4
Melt Flw Index 230 C / 2.16 Kg	ISO R 1133	g/10 minutes	0.2
Melt Flw Index 230 C / 5 Kg	DIN 53 735	g/10 minutes	0.6
Fusion Point		Deg C	260

Thermal Properties

Property	Test Method	Unit	Value
Thermal conductivity at 23°C	DIN 52612	W/m.k	0.23
Specific heat at 23°C	C	Kj/kg.K	1.73
Coefficient of linear thermal expansion	DIN 53 752	K ⁻¹	1.5 x 10 ⁻⁴
Under weight deformation temperature	ASTM D 648	°C	44
1.8 N/mm ²	ISO 75	°C	72
0.45 N/mm ²	DIN 53 461		
Breaking temperature	ASTM D 746	°C	-13
VICAT softening point	ASTM D 1525 ISO 306 DIN 53 460	°C	130

Comparison of PRIME PP-R Pipes With all other kind of Plumbing Pipes

Properties	Pipe Type	PRIME PP-R	Steel	Galvanized	Copper	U-PVC	C-PVC	Remarks
Service Life Guarantee (years)		50	3-15	5-25	3-30	0-20	0-50	The guarantee service life of pipes other than PP-R depends on quality of raw material used and many other parameters.
Brittleness Characteristics		Resistant	Resistant	Resistant	Worrisome	Not Resistant	Not Resistant	--
Corrosion Resistance - Abrasion Resistance		Very Resistant	Very Frail	Very Frail	Very Frail	Partly Resistant	Partly Resistant	These evaluations depend on chemical resistance of the raw material.
Easiness in Fittings Production		Very Easy	Difficult	Difficult	Difficult	Very Easy	Very Easy	--
Easiness in laying (Easiest: 100, Hardest: 0)		100	25	25	40	80	80	--
Hygienic Superiority		Excellent	Worrisome	Worrisome	Worrisome	Worrisome	Good	--
Inner Surface Smoothness		Excellent	Smooth	Smooth	Rough	Rough	Smooth	--
Fitting Types and Cost		Excellent - Cheap	Limited - Expensive	Limited - Expensive	Limited - Expensive	Different - Cheap	Different - Expensive	--
Chemical Resistance		Excellent	Problematic	Problematic	Worrisome	Worrisome	Good	--
Joining Reliability (Max:100, Min:0)		100	0-80	0-80	0-50	0-50	0-80	Compression, soldering and seal connection are worrisome
Easiness in Repair & Maintenance		Very Easy	Troubling	Troubling	Difficult	Difficult	Difficult	--
Pressure Resistance for PN 20 at Time Zero		>80 bar	>100 bar	>100 bar	>40 bar	30 bar	55 bar	--



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AN ISO 9001 COMPANY

Dimensional details of PRIME PP-RC Pipes

Inches	OD in MM	PN 10 / SDR 11		PN 16 / SDR 7.4		PN 20 / SDR 6	
		Wall Thickness	ID	Wall Thickness	ID	Wall Thickness	ID
½	20	1.9	16.2	2.8	14.4	3.4	13.2
¾	25	2.3	20.4	3.5	18	4.2	16.6
1	32	2.9	26.2	4.4	23.2	5.4	21.2
1 ¼	40	3.7	32.6	5.5	29	6.7	26.6
1 ½	50	4.6	40.8	6.9	36.2	8.3	33.4
2	63	5.8	51.4	8.6	45.8	10.5	42
2 ½	75	6.8	61.4	10.3	54.4	12.5	50
3	90	8.2	73.6	12.3	65.4	15.0	60
4	110	10	90	15.1	79.8	18.3	73.4
6	160	14.6	130.8	21.9	116.2	26.6	106.8

Tolerance in OD < 75mm : 0.1mm

Tolerance in OD > 75mm : 0.2mm