



# Christensen Irrigation (Singapore) Pte Ltd

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## Friction Loss Characteristics

### PVC Schedule 40 IPS Plastic Pipe

(1120, 1220) C=150

psi Loss Per 100 Feet of Pipe (psi/100 ft.)

Sizes 1/2" through 6" Flow 1 through 600 GPM

Size	1/2"		3/4"		1"		1 1/4"		1 1/2"		2"		2 1/2"		3"		4"		6"	
O.D.	0.840	1.55	1.050	1.20	1.315	1.660	1.900	2.375	2.875	3.500	4.500	6.625	8.068	10.016	12.750	15.750	20.000	24.000	36.000	48.000
I.D.	0.622	0.824	0.842	1.049	1.380	1.610	2.067	2.469	3.068	3.668	4.267	5.267	6.267	7.267	8.267	9.267	10.267	11.267	13.267	15.267
Wall Thk	0.109	0.113	0.133	0.140	0.145	0.154	0.154	0.203	0.203	0.216	0.237	0.280	0.280	0.280	0.280	0.280	0.280	0.280	0.280	0.280
Flow GPM	Velocity fps	psi Loss	Velocity fps	psi Loss	Velocity fps	psi Loss	Velocity fps	psi Loss	Velocity fps	psi Loss	Velocity fps	psi Loss	Velocity fps	psi Loss	Velocity fps	psi Loss	Velocity fps	psi Loss	Velocity fps	psi Loss
1	1.05	0.43	0.60	0.11	0.37	0.03	0.21	0.01	0.15	0.00										
2	2.11	1.55	1.20	0.39	0.74	0.12	0.42	0.03	0.31	0.02	0.19	0.00								
3	3.16	3.28	1.80	0.84	1.11	0.26	0.64	0.07	0.47	0.03	0.28	0.01	0.20	0.00						
4	4.22	5.60	2.40	1.42	1.48	0.44	0.85	0.12	0.62	0.05	0.38	0.02	0.26	0.01						
5	5.27	8.46	3.00	2.15	1.85	0.66	1.07	0.18	0.78	0.08	0.47	0.02	0.33	0.01	0.21	0.00				
6	6.33	11.86	3.60	3.02	2.22	0.93	1.28	0.25	0.94	0.12	0.57	0.03	0.40	0.01	0.26	0.01				
7	7.38	15.77	4.20	4.01	2.59	1.24	1.49	0.33	1.10	0.15	0.66	0.05	0.46	0.02	0.30	0.01				
8	8.44	20.20	4.80	5.14	2.96	1.59	1.71	0.42	1.25	0.20	0.76	0.06	0.53	0.02	0.34	0.01				
9	9.49	25.12	5.40	6.39	3.33	1.97	1.92	0.52	1.41	0.25	0.85	0.07	0.60	0.03	0.39	0.01				
10	10.55	30.54	6.00	7.77	3.70	2.40	2.14	0.63	1.57	0.30	0.95	0.09	0.66	0.04	0.43	0.01				
11	11.60	36.43	6.60	9.27	4.07	2.86	2.35	0.75	1.73	0.36	1.05	0.11	0.73	0.04	0.47	0.02				
12	12.65	42.80	7.21	10.89	4.44	3.36	2.57	0.89	1.88	0.42	1.14	0.12	0.80	0.05	0.52	0.02	0.30	0.00		
14	14.76	56.94	8.41	14.48	5.19	4.47	2.99	1.18	2.20	0.56	1.33	0.17	0.93	0.07	0.60	0.02	0.35	0.01		
16	16.87	72.92	9.61	18.55	5.93	5.73	3.42	1.51	2.51	0.71	1.52	0.21	1.07	0.09	0.69	0.03	0.40	0.01		
18	18.98	90.69	10.81	23.07	6.67	7.13	3.85	1.88	2.83	0.89	1.71	0.26	1.20	0.11	0.78	0.04	0.45	0.01		
20	21.09	110.23	12.01	28.04	7.41	8.66	4.28	2.28	3.14	1.08	1.90	0.32	1.33	0.13	0.86	0.05	0.50	0.01		
22			13.21	33.45	8.15	10.33	4.71	2.72	3.46	1.29	2.10	0.38	1.47	0.16	0.95	0.06	0.55	0.01		
24			14.42	39.30	8.89	12.14	5.14	3.20	3.77	1.51	2.29	0.45	1.60	0.19	1.04	0.07	0.60	0.02		
26			15.62	45.58	9.64	14.08	5.57	3.17	4.09	1.75	2.48	0.52	1.74	0.22	1.12	0.08	0.65	0.02		
28			16.82	52.28	10.38	16.15	5.99	4.25	4.40	2.01	2.67	0.60	1.87	0.25	1.21	0.09	0.70	0.02		
30			18.02	59.41	11.12	18.35	6.42	4.83	4.72	2.28	2.86	0.68	2.00	0.29	1.30	0.10	0.75	0.03		
35					12.97	24.42	7.49	6.43	5.50	3.04	3.34	0.90	2.34	0.38	1.51	0.13	0.88	0.04	0.38	0.00
40					14.83	31.27	8.56	8.23	6.29	3.89	3.81	1.15	2.67	0.49	1.73	0.17	1.00	0.04	0.44	0.01
45					16.68	38.89	9.64	10.24	7.08	4.84	4.29	1.43	3.01	0.60	1.95	0.21	1.13	0.06	0.49	0.01
50					18.53	47.27	10.71	12.45	7.87	5.88	4.77	1.74	3.34	0.73	2.16	0.26	1.25	0.07	0.55	0.01
55					11.78	14.85	8.65	7.01	5.25	2.08	3.68	0.88	2.38	0.30	1.38	0.08	0.61	0.01		
60					12.85	17.45	9.44	8.24	5.72	2.44	4.01	1.03	2.60	0.36	1.51	0.10	0.66	0.01		
65					13.92	20.23	10.23	9.56	6.20	2.83	4.35	1.19	2.81	0.41	1.63	0.11	0.72	0.02		
70					14.99	23.21	11.01	10.96	6.68	3.25	4.68	1.37	3.03	0.48	1.76	0.13	0.77	0.02		
75					16.06	26.37	11.80	12.46	7.16	3.69	5.01	1.56	3.25	0.54	1.88	0.14	0.83	0.02		
80					17.13	29.72	12.59	14.04	7.63	4.16	5.35	1.75	3.46	0.61	2.01	0.16	0.88	0.02		
85					18.21	33.26	13.37	15.71	8.11	4.66	5.68	1.96	3.68	0.68	2.13	0.18	0.94	0.02		
90					19.28	36.97	14.16	17.46	8.59	5.18	6.02	2.18	3.90	0.76	2.26	0.20	0.99	0.03		
95					14.95	19.30	9.07	5.72	6.35	2.41	4.11	0.84	2.39	0.22	1.05	0.03				
100					15.74	21.22	9.54	6.29	6.69	2.65	4.33	0.92	2.51	0.25	1.10	0.03				
110					17.31	25.32	10.50	7.51	7.36	3.16	4.76	1.10	2.76	0.29	1.22	0.04				
120					18.88	29.75	11.45	8.82	8.03	3.72	5.20	1.29	3.02	0.34	1.33	0.05				
130							12.41	10.23	8.70	4.31	5.63	1.50	3.27	0.40	1.44	0.05				
140							13.36	11.74	9.37	4.94	6.06	1.72	3.52	0.46	1.55	0.06				
150							14.32	13.33	10.03	5.62	6.50	1.95	3.77	0.52	1.66	0.07				
160							15.27	15.03	10.70	6.33	6.93	2.20	4.02	0.59	1.77	0.08				
170							16.23	16.81	11.37	7.08	7.36	2.46	4.27	0.66	1.88	0.09				
180							17.18	18.69	12.04	7.87	7.80	2.74	4.53	0.73	1.99	0.10				
190							18.14	20.66	12.71	8.70	8.23	3.02	4.78	0.81	2.10	0.11				
200							19.09	22.72	13.38	9.57	8.66	3.33	5.03	0.89	2.21	0.12				
225									15.05	11.90	9.75	4.14	5.66	1.10	2.49	0.15				
250									16.73	14.47	10.83	5.03	6.29	1.34	2.77	0.18				
275									18.40	17.26	11.92	6.00	6.92	1.60	3.05	0.22				
300											13.00	7.05	7.55	1.88	3.32	0.26				
325											14.08	8.17	8.18	2.18	3.60	0.30				
350											15.17	9.38	8.81	2.50	3.88	0.34				
375											16.25	10.65	9.43	2.84	4.15	0.39				
400											17.33	12.01	10.06	3.20	4.43	0.44				
425											18.42	13.43	10.69	3.58	4.71	0.49				
450											19.50	14.93	11.32	3.98	4.99	0.54				
475													11.95	4.40	5.26	0.60				
500													12.58	4.84	5.54	0.66				
550													13.84	5.77	6.10	0.79				
600													15.10	6.78	6.65	0.92				

Note: Dark shaded area of chart indicates velocities over 5' per second. Use with caution.

Velocity of flow values are computed from the general equation  $V = .408 \frac{Q}{d^2}$

Friction pressure loss values are computed from the equation:  $hf = 0.2083 \left( \frac{100}{c} \right) 1.852 \left( \frac{Q^{1.852}}{d^{4.866}} \right) \times 4.33$  for psi loss per 100' of pipe