Pipe Friction - Water

Friction Loss Per 100 Feet For Water In New Wrought Iron Or Schedule 40 Steel Pipe

1/4"
0.364" inside dia.

U.S. Gals. Per Min.	vel. V f.p.s.	vel. head $V^2/2g$ feet	frict. loss h_f feet
0.8	2.47	0.09	12.7
1.0	3.08	0.15	19.1
1.2	3.70	0.21	26.7
1.4	4.32	0.29	35.3
1.6	4.93	0.38	45.2
1.8	5.55	0.48	56.4
2.0	6.17	0.59	69.0
2.5	7.71	0.92	105.0
3.0	9.25	1.33	148.0
3.5	10.79	1.81	200.0
4.0	12.33	2.36	259.0
5.0	15.42	3.69	398.0

3/8"
0.493" inside dia.

U.S. Gals. Per Min.	vel. V f.p.s.	vel. head $V^2/2g$ feet	frict. loss h_f feet
1.4	2.35	0.09	7.85
1.6	2.68	0.11	10.1
1.8	3.02	0.14	12.4
2.0	3.36	0.18	15.0
2.5	4.20	0.27	22.6
3.0	5.04	0.39	31.8
3.5	5.88	0.54	42.6
4.0	6.72	0.70	54.9
5.0	8.40	1.10	83.5
6.0	10.08	1.58	118.0
7.0	11.80	2.15	158.0
8.0	13.40	2.81	205.0
9.0	15.10	3.56	258.0
10.0	16.80	4.39	316.0

1/2"
0.622" inside dia.

U.S. Gals. Per Min.	vel. V f.p.s.	vel. head $V^2/2g$ feet	frict. loss h_f feet
2.0	2.11	0.07	4.78
2.5	2.64	0.11	7.16
3.0	3.17	0.16	10.0
3.5	3.70	0.21	13.3
4.0	4.22	0.28	17.1
5.0	5.28	0.43	25.8
6.0	6.34	0.62	36.5
7.0	7.39	0.85	48.7
8.0	8.45	1.11	62.7
9.0	9.50	1.40	78.3
10.0	10.56	1.73	95.9
12.0	12.70	2.49	136.0
14.0	14.80	3.40	183.0
16.0	16.90	4.43	235.0

3/4"
0.824" inside dia.

U.S. Gals. Per Min.	vel. V f.p.s.	vel. head $V^2/2g$ feet	frict. loss h_f feet
3.0	1.81	0.05	2.50
3.5	2.11	0.07	3.30
4.0	2.41	0.09	4.21
5.0	3.01	0.14	6.32
6.0	3.61	0.20	8.87
7.0	4.21	0.28	11.8
8.5	4.81	0.36	15.0
9.0	5.42	0.46	18.8
10.0	6.02	0.56	23.0
12.0	7.22	0.81	32.6
14.0	8.42	1.10	43.5
16.0	9.63	1.44	56.3
18.0	10.80	1.82	70.3
20.0	12.00	2.25	86.1
22.0	13.20	2.72	104.0
24.0	14.40	3.24	122.0
26.0	15.60	3.80	143.0
28.0	16.80	4.41	164.0

CAUTION: No allowance has been made for age, differences in diameter resulting from manufacturing tolerances or any abnormal conditions of interior pipe surface. It is recommended that for commercial application a reserve or margin of safety to cover these effects be added to the values shown in the tables. Where no careful analysis of these effects are made a reserve of 15% is recommended.

Plastic pipe having a smoother wall will generate 15-20% less friction loss at any given flow rate.