

Irrigation Association Friction Loss Chart 2008

Schedule 80 Steel

ASTM B53 C=100
psi loss per 100 feet of pipe

Nominal Size	1/2"		3/4"		1"		1-1/4"		1-1/2"		2"		2-1/2"		3"		4"	
Pipe ID	0.546		0.742		0.957		1.278		1.500		1.939		2.323		2.900		3.826	
Pipe OD	0.840		1.050		1.315		1.660		1.900		2.375		2.875		3.500		4.500	
Avg. Wall	0.147		0.154		0.179		0.191		0.200		0.218		0.276		0.300		0.337	
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
1	1.37	1.71	0.74	0.39	0.45	0.11	0.25	0.03	0.18	0.01								
2	2.74	6.19	1.48	1.39	0.89	0.40	0.50	0.10	0.36	0.05								
3	4.11	13.11	2.22	2.95	1.34	0.85	0.75	0.21	0.54	0.10								
4	5.47	22.34	2.96	5.02	1.78	1.46	1.00	0.36	0.73	0.16								
5	6.84	33.77	3.71	7.59	2.23	2.20	1.25	0.54	0.91	0.25								
6	8.21	47.33	4.45	10.64	2.67	3.08	1.50	0.75	1.09	0.35	0.65	0.10						
7	9.58	62.97	5.19	14.16	3.12	4.10	1.75	1.00	1.27	0.46	0.76	0.13						
8	10.95	80.63	5.93	18.13	3.56	5.26	2.00	1.29	1.45	0.59	0.87	0.17						
9			6.67	22.54	4.01	6.54	2.25	1.60	1.63	0.73	0.98	0.21						
10			7.41	27.40	4.45	7.94	2.50	1.94	1.81	0.89	1.09	0.26						
12			8.89	38.41	5.35	11.14	3.00	2.73	2.18	1.25	1.30	0.36	0.91	0.15				
14			10.37	51.10	6.24	14.81	3.50	3.63	2.54	1.66	1.52	0.48	1.06	0.20				
16			11.86	65.44	7.13	18.97	4.00	4.64	2.90	2.13	1.74	0.61	1.21	0.25				
18			13.34	81.39	8.02	23.60	4.50	5.78	3.26	2.65	1.95	0.76	1.36	0.32				
20					8.91	28.68	5.00	7.02	3.63	3.22	2.17	0.92	1.51	0.38				
22					9.80	34.22	5.50	8.37	3.99	3.84	2.39	1.10	1.66	0.46	1.07	0.16	0.61	0.04
24					10.69	40.20	6.00	9.84	4.35	4.51	2.60	1.29	1.81	0.54	1.16	0.18	0.67	0.05
26					11.58	46.62	6.49	11.41	4.71	5.23	2.82	1.50	1.97	0.62	1.26	0.21	0.72	0.05
28					12.47	53.48	6.99	13.09	5.08	6.00	3.04	1.72	2.12	0.71	1.36	0.24	0.78	0.06
30					13.36	60.77	7.49	14.87	5.44	6.82	3.26	1.96	2.27	0.81	1.46	0.28	0.84	0.07
32							7.99	16.76	5.80	7.69	3.47	2.20	2.42	0.92	1.55	0.31	0.89	0.08
34							8.49	18.75	6.17	8.60	3.69	2.47	2.57	1.02	1.65	0.35	0.95	0.09
36							8.99	20.85	6.53	9.56	3.91	2.74	2.72	1.14	1.75	0.39	1.00	0.10
38							9.49	23.04	6.89	10.57	4.12	3.03	2.87	1.26	1.84	0.43	1.06	0.11
40							9.99	25.34	7.25	11.62	4.34	3.33	3.02	1.38	1.94	0.47	1.11	0.12
42							10.49	27.74	7.62	12.72	4.56	3.65	3.18	1.51	2.04	0.51	1.17	0.13
44							10.99	30.23	7.98	13.87	4.77	3.98	3.33	1.65	2.13	0.56	1.23	0.15
46							11.49	32.83	8.34	15.06	4.99	4.32	3.48	1.79	2.23	0.61	1.28	0.16
48							11.99	35.52	8.70	16.29	5.21	4.67	3.63	1.94	2.33	0.66	1.34	0.17
50							12.49	38.31	9.07	17.57	5.43	5.04	3.78	2.09	2.43	0.71	1.39	0.18
55							13.74	45.70	9.97	20.96	5.97	6.01	4.16	2.50	2.67	0.85	1.53	0.22
60									10.88	24.63	6.51	7.06	4.54	2.93	2.91	1.00	1.67	0.26
65									11.79	28.56	7.05	8.19	4.91	3.40	3.15	1.16	1.81	0.30
70									12.69	32.77	7.60	9.40	5.29	3.90	3.40	1.33	1.95	0.34
75									13.60	37.23	8.14	10.68	5.67	4.43	3.64	1.51	2.09	0.39
80											8.68	12.03	6.05	4.99	3.88	1.70	2.23	0.44
85											9.22	13.46	6.43	5.59	4.12	1.90	2.37	0.49
90											9.77	14.97	6.80	6.21	4.37	2.11	2.51	0.55
95											10.31	16.54	7.18	6.87	4.61	2.33	2.65	0.61
100											10.85	18.19	7.56	7.55	4.85	2.57	2.79	0.67
110											11.94	21.70	8.32	9.01	5.34	3.06	3.07	0.79
120											13.02	25.50	9.07	10.58	5.82	3.60	3.34	0.93
130											14.11	29.57	9.83	12.27	6.31	4.17	3.62	1.08
140													10.58	14.08	6.79	4.78	3.90	1.24
150													11.34	16.00	7.28	5.44	4.18	1.41
160													12.10	18.03	7.76	6.13	4.46	1.59
170													12.85	20.17	8.25	6.85	4.74	1.78
180													13.61	22.43	8.73	7.62	5.02	1.98
190													14.37	24.79	9.22	8.42	5.30	2.19
200															9.70	9.26	5.57	2.40
220															10.67	11.05	6.13	2.87
240															11.64	12.98	6.69	3.37
260															12.61	15.05	7.25	3.91
280															13.58	17.27	7.80	4.48
300															14.55	19.62	8.36	5.10
320																	8.92	5.74
340																	9.48	6.42
360																	10.03	7.14
380																	10.59	7.89
400																	11.15	8.68
420																	11.71	9.50
440																	12.26	10.36
460																	12.82	11.25
480																	13.38	12.17
500																	13.94	13.12

Shaded area represents velocities over 7 fps.
Use with caution where water hammer is a concern.