

Fluid Velocity to Flow Rate Conversion Chart

Description				Fluid velocity for flow rate of:											
Nom OD	Wt	Int Diameter		1,000 B/D			10 cu m/hr			100 cu m/D			1,000 cu ft/D		
in. mm	lb/ft	in. mm		m/min	cm/sec	ft/min	m/min	cm/sec	ft/min	m/min	cm/sec	ft/min	m/min	cm/sec	ft/min
4 1/2" (114.3)	9.50	4.090	103.9	13.08	21.8	42.7	19.74	32.9	64.8	8.21	13.70	26.90	2.320	3.867	7.613
	11.60	4.000	101.6	13.44	22.4	44.7	20.40	34.0	66.9	8.49	14.10	27.80	2.426	4.043	7.958
	13.50	3.920	99.6	14.22	23.7	46.6	21.48	35.8	70.5	8.94	14.90	29.30	2.530	4.216	8.299
	15.10	3.826	97.2	15.00	25.0	48.8	22.50	37.5	73.8	9.36	15.60	30.70	2.651	4.419	8.698
5" (127)	11.50	4.560	115.8	10.50	17.5	34.4	15.84	26.4	52.0	6.59	11.00	21.60	1.866	3.110	6.123
	13.00	4.494	114.2	10.80	18.0	35.4	16.26	27.1	53.4	6.76	11.30	22.20	1.921	3.202	6.304
	15.50	4.408	112.0	11.28	18.8	36.8	16.98	28.3	55.7	7.06	11.80	23.20	1.997	3.329	6.553
	18.00	4.276	108.6	11.88	19.8	39.1	17.94	29.9	58.9	7.46	12.40	24.50	2.123	3.538	6.964
5 1/2" (139.7)	13.00	5.044	128.1	8.64	14.4	28.1	12.96	21.6	42.5	5.39	8.90	17.70	1.525	2.542	5.004
	14.00	5.012	127.3	8.70	14.5	28.5	13.08	21.8	42.9	5.44	9.10	17.80	1.545	2.575	5.069
	15.50	4.950	125.7	8.94	14.9	29.2	13.44	22.4	44.1	5.59	9.30	18.30	1.584	2.640	5.196
	17.00	4.892	124.3	9.12	15.2	29.9	13.74	22.9	45.1	5.72	9.50	18.70	1.622	2.703	5.320
	20.00	4.778	121.4	9.60	16.0	31.3	14.40	24.0	47.3	5.99	9.90	19.70	1.700	2.833	5.577
6 5/8" (168.3)	23.00	4.670	118.6	10.02	16.7	32.8	15.12	25.2	49.6	6.29	10.50	20.60	1.780	2.966	5.838
	17.00	6.135	155.8	5.82	9.7	19.0	8.76	14.6	28.7	3.64	6.10	11.90	1.031	1.719	3.383
	20.00	6.049	153.6	5.94	9.9	19.5	9.00	15.0	29.5	3.74	6.20	12.30	1.061	1.768	3.480
	24.00	5.921	150.5	6.24	10.4	20.4	9.42	15.7	30.9	3.92	6.50	12.80	1.107	1.845	3.632
7" (177.8)	28.00	5.791	147.1	6.54	10.9	21.3	9.90	16.5	32.5	4.12	6.80	13.50	1.157	1.929	3.797
	32.00	5.675	144.1	6.78	11.3	22.2	10.20	17.0	33.5	4.24	7.10	13.90	1.205	2.008	3.953
	17.00	6.538	166.1	5.10	8.5	16.7	7.68	12.8	25.2	3.19	5.30	10.50	0.908	1.513	2.979
	20.00	6.456	164.0	5.22	8.7	17.2	7.86	13.1	25.8	3.27	5.40	10.70	0.931	1.552	3.055
	23.00	6.366	161.7	5.40	9.0	17.6	8.16	13.6	26.8	3.39	5.60	11.10	0.958	1.596	3.142
	26.00	6.276	159.4	5.52	9.2	18.2	8.34	13.9	27.4	3.47	5.80	11.40	0.985	1.642	3.233
	29.00	6.184	157.1	5.70	9.5	18.7	8.64	14.4	28.4	3.51	6.00	11.80	1.015	1.691	3.329
7 5/8" (193.7)	32.00	6.094	154.8	5.88	9.8	19.3	8.88	14.8	29.1	3.69	6.20	12.10	1.045	1.745	3.429
	35.00	6.004	152.5	6.06	10.1	19.8	9.12	15.2	29.9	3.79	6.30	12.40	1.077	1.794	3.532
	38.00	5.920	150.4	6.24	10.4	20.4	9.42	15.7	30.9	3.92	6.50	12.80	1.107	1.846	3.633
	20.00	7.125	181.0	4.32	7.2	14.1	6.48	10.8	21.3	2.69	4.40	8.86	0.764	1.274	2.508
	24.00	7.052	178.4	4.44	7.4	14.5	6.54	10.9	21.5	2.72	4.50	8.94	0.786	1.310	2.580
	26.40	6.969	177.0	4.50	7.5	14.7	6.78	11.3	22.2	2.82	4.70	9.23	0.799	1.332	2.622
8 5/8" (219.1)	29.70	6.875	174.6	4.62	7.7	15.1	6.96	11.6	22.8	2.90	4.80	9.48	0.821	1.369	2.694
	33.70	6.765	171.8	4.80	8.0	15.6	7.20	12.0	23.6	2.99	4.90	9.81	0.848	1.413	2.782
	39.00	6.625	168.3	4.92	8.2	16.3	7.44	12.4	24.4	3.09	5.20	10.20	0.884	1.474	2.901
	24.00	8.097	205.7	3.33	5.55	10.9	5.02	8.38	16.50	2.09	3.50	6.86	0.592	0.9865	1.942
	28.00	8.017	203.6	3.39	5.66	11.1	5.13	8.55	16.80	2.13	3.60	6.98	0.604	1.006	1.981
	32.00	7.921	201.2	3.48	5.81	11.4	5.25	8.75	17.20	2.18	3.60	7.15	0.618	1.031	2.029
	36.00	7.825	198.8	3.55	5.92	11.7	5.35	8.93	17.60	2.23	3.70	7.32	0.634	1.056	2.079
9 5/8" (244.5)	40.00	7.725	196.2	3.63	6.05	12.0	5.46	9.10	17.90	2.27	3.80	7.44	0.650	1.084	2.134
	44.00	7.625	193.7	3.75	6.25	12.3	5.64	9.40	18.50	2.35	3.90	7.69	0.668	1.113	2.190
	49.00	7.511	190.8	3.87	6.45	12.7	5.82	9.70	19.10	2.42	4.00	7.94	0.688	1.147	2.257
	29.30	9.063	230.2	2.66	4.44	8.70	4.00	6.68	13.10	1.66	2.77	5.45	0.472	0.787	1.550
	32.30	9.001	228.6	2.69	4.49	8.83	4.05	6.75	13.30	1.68	2.80	5.53	0.479	0.799	1.572
	36.00	8.921	226.6	2.74	4.58	8.98	4.17	6.95	13.70	1.73	2.89	5.69	0.488	0.813	1.600
10 3/4" (273.0)	40.00	8.835	224.4	2.80	4.67	9.16	4.23	7.05	13.90	1.76	2.93	5.78	0.497	0.829	1.631
	43.50	8.755	222.4	2.85	4.75	9.33	4.29	7.15	14.10	1.78	2.97	5.86	0.506	0.844	1.661
	47.00	8.681	220.5	2.88	4.81	9.49	4.35	7.25	14.30	1.81	3.02	5.95	0.515	0.859	1.690
	53.50	8.535	216.8	3.00	5.00	9.81	4.51	7.53	14.80	1.88	3.13	6.16	0.533	0.888	1.748
	32.75	10.192	258.9	2.10	3.50	6.88	3.17	5.28	10.40	1.32	2.19	4.33	0.374	0.623	1.226
	40.50	10.050	255.3	2.16	3.60	7.08	3.25	5.42	10.70	1.35	2.25	4.45	0.384	0.641	1.261
11 3/4" (298.5)	45.50	9.950	252.7	2.20	3.68	7.22	3.33	5.55	10.90	1.39	2.31	4.53	0.392	0.653	1.286
	51.00	9.850	250.2	2.25	3.75	7.37	3.39	5.65	11.10	1.41	2.35	4.61	0.400	0.666	1.312
	55.50	9.760	247.9	2.29	3.82	7.51	3.45	5.75	11.30	1.44	2.39	4.70	0.408	0.679	1.337
	60.70	9.660	245.4	2.34	3.91	7.66	3.52	5.88	11.50	1.46	2.44	4.78	0.416	0.693	1.364
	65.70	9.560	242.8	2.40	4.00	7.82	3.60	6.00	11.80	1.50	2.49	4.91	0.425	0.708	1.393
	38.00	11.150	283.2	1.76	2.94	5.75	2.64	4.41	8.66	1.10	1.83	3.60	0.312	0.520	1.024
13 3/8" (339.7)	42.00	11.084	281.5	1.77	2.96	5.82	2.67	4.45	8.76	1.11	1.85	3.64	0.316	0.526	1.036
	47.00	11.000	279.4	1.81	3.02	5.91	2.73	4.55	8.96	1.14	1.89	3.73	0.321	0.534	1.052
	54.00	10.880	276.4	1.84	3.08	6.04	2.79	4.65	9.15	1.16	1.93	3.81	0.328	0.547	1.076
	60.00	10.772	273.6	1.88	3.14	6.16	2.83	4.73	9.29	1.18	1.97	3.86	0.334	0.557	1.097
	48.00	12.715	323.0	1.35	2.25	4.42	2.04	3.40	6.69	0.85	1.41	2.78	0.240	0.400	0.7875
16" (406.4)	54.50	12.615	320.4	1.37	2.29	4.49	2.07	3.46	6.79	0.86	1.44	2.82	0.244	0.406	0.8001
	61.00	12.515	317.9	1.39	2.33	4.56	2.11	3.52	6.92	0.88	1.46	2.87	0.248	0.413	0.8129
	68.00	12.415	315.3	1.41	2.36	4.64	2.13	3.56	6.99	0.89	1.48	2.91	0.252	0.420	0.8261
	72.00	12.347	313.6	1.43	2.39	4.69	2.16	3.60	7.09	0.90	1.49	2.95	0.255	0.424	0.8352
20" (508.0)	55.00	15.376	390.6	0.92	1.54	3.02	1.39	2.32	4.56	0.58	0.86	1.90	0.164	0.274	0.5385
	65.00	15.250	387.4	0.93	1.56	3.07	1.41	2.36	4.63	0.59	0.91	1.92	0.167	0.278	0.5475
	75.00	15.124	384.2	0.95	1.59	3.13	1.44	2.40	4.72	0.60	0.99	1.96	0.170	0.283	0.5566
	84.00	15.010	381.3	0.97	1.62	3.17	1.46	2.44	4.79	0.61	1.02	1.99	0.172	0.287	0.5651

**AVERAGE FLUID VELOCITY VS TUBING SIZE
API NON-UPSET TUBING**

Description				Fluid velocity for flow rate of:											
Nom OD	Wt	Int diameter		1,000 B/D			10 cu m/hr			100 cu m/D			1,000 cu ft/D		
in. (mm)	lb/ft	in.	mm	m/min	cm/sec	ft/min	m/min	cm/sec	ft/min	m/min	cm/sec	ft/min	m/min	cm/sec	ft/min
1.9" (48.3)	2.75	1.610	40.89	84.54	140.9	276	127.11	211.8	417.0	52.9	88.11	173.5	15.0	25.0	49.12
2 3/8" (60.3)	4.00	2.041	51.84	52.56	87.6	172	79.00	131.7	259.2	32.8	54.79	107.8	9.31	15.5	30.56
	4.60	1.995	50.67	55.02	91.7	180	82.70	137.8	271.3	34.4	57.32	112.8	9.75	16.3	31.99
	5.80	1.867	47.42	62.82	104.7	205	94.42	157.4	309.8	39.3	65.47	128.9	11.1	18.6	36.53
2 7/8" (73.0)	6.40	2.441	62.00	36.78	61.3	120	55.28	92.1	181.4	22.9	38.31	75.5	6.51	10.9	21.37
	8.60	2.259	57.38	42.90	71.5	140	64.48	107.5	211.5	26.8	44.72	87.9	7.60	12.7	24.95
3 1/2" (88.9)	7.70	3.068	77.93	23.28	38.8	76.0	34.99	58.3	114.8	14.5	24.25	47.7	4.12	6.87	13.53
	9.20	2.992	76.00	24.48	40.8	79.8	36.79	61.3	120.7	15.3	25.50	50.2	4.33	7.22	14.22
	10.20	2.922	74.22	25.68	42.8	83.7	38.60	64.3	126.6	16.1	26.75	52.7	4.54	7.57	14.91
	12.70	2.750	69.85	28.98	48.3	94.5	43.56	72.6	142.9	18.1	30.20	59.4	5.13	8.55	16.84
4" (101.6)	9.50	3.548	90.12	17.40	29.0	56.7	26.15	43.6	85.8	10.9	18.14	35.7	3.08	5.14	10.11
4 1/2" (114.3)	12.60	3.958	100.53	13.98	23.3	45.6	21.01	35.0	68.9	8.7	14.56	28.7	2.48	4.13	8.128